October 7, 2016

***Present:*** Vladimir Alvarado, Saman Aryana, David Bagley, Marjorie Bedessem, David Bell, Stephen Ftaclas, Joseph Holles, Patrick Johnson, Billy Lew, Dongmei Li, Kevin Milliman, John Oakey, Aaron Reichl, Mary Shafer-Malicki, Mike Thomas, Heather Warren (Support Staff), and Karen Wawrousek.

***Welcome and Introductions:***

- Dr. Vladimir Alvarado opened the meeting and welcomed the board. Dr. Marjorie Bedessem was introduced and welcomed as a new member of the board.
- Alvarado read the Safety Minute, provided by Kyle Winkelman, who could not attend the meeting. (See Attachment A).
- It was motioned for the agenda to be approved and all were in favor. The agenda was approved.

***Chemical Engineering Webinar:*** To View:
Go to: https://wyocast.uwyo.edu/WyoCast/Play/dee4fecbdbcc411a8fc5f2584f6487f71d

***ABET Update:*** (See Attachment B)

- Dr. David Bagley reported on the history of ABET. He said in 2009 the department had a weakness and then in 2011 an interim report was submitted. In 2012 a due process report was also submitted. By 2012 all weaknesses were resolved and the department was accredited.
- Regarding the current timeline, Bagley reported that a year and a half ago a Self-Study was submitted to ABET. Last October the accreditors visited and they provided a draft statement in February 2016.
- Bagley explained the possible results from an ABET review. The first is called a deficiency. This is where the program is not in compliance. A weakness is a step down from this and this is where remedial action is required. He reported that in 2011 an interim report was submitted as the department had to address the weakness and the remedial action required. He said this is usually done through an interim report. The next step down, he said, is a concern. This has to be addressed but doesn't necessarily require an interim report. Finally there can be an observation. This is where ABET offers to assist the institution.
- Bagley reported that on our draft statement, we had one deficiency and this had to do with students in Criterion 1. He reported that the issue was that a student graduated from our program with a "D" in Calculus III. The rules say that everyone has to have a grade of "C" or better and somehow this person snuck through the system. Billy Lew asked if this was the same case that was discussed at least year's meeting. Bagley replied yes.
- Bagley reported that Dr. Dennis Coon put together two reports; one in March and the second in May. The reason 2 had to be done was that the department couldn't show anything until the end of the semester. Dr. David Bell also did a great job in providing information for the reports. Bagley reported that in August the final results were received for this last round and we got rid of the deficiency and the concern. He said there is still a weakness in continuous improvement. He reported that the department is accredited through 9/30/2018 and an interim report will be submitted.
- See slide on Criterion 4 regarding continuous improvement. Bagley reported we need to make sure we are doing what we say we are doing. ABET just needs better documentation of what we do.
- Bagley reported on the plan to address this weakness. First they have identified all of the recommendations from previous assessments. These were implemented in the spring 2016 courses. They have also assessed some of the outcomes in the spring even though it wasn't part of the cycle. He said that ABET wants to see more.

- Kevin Milliman asked if the assessments would be too difficult to do on an annual basis. He asked if it could be done every year and get into a rhythm. Bagley replied that there are A-K outcomes and each has to be assessed. These have been mapped to different courses. The instructor then chooses student work to be assessed, they develop a rubric, and then write it up. He added that they have an every-two-year cycle, but he would like to see an assessment of some kind every year so that everyone continues doing the process and understands that this needs to be done. Alvarado added that ABET is constantly changing the way they want things to be assessed and we have to keep track of what they want. He added that our evaluator was very supportive and understanding regarding the conditions of the department and that Bagley and Coon did a great job.
- Bagley reported that going forward in fall 2016 and spring 2017, they will further implement the recommendations. He said this year is our regularly scheduled full assessment year for all of our outcomes. He reported they will emphasize to make sure to discuss these recommendations that were made from the last assessment. Then in May they will prepare the full assessment report and prepare the interim report to assess the weakness.
- Bagley reported that he has talked to all of the instructors and has documented the emails. He has created a file to show the communications. He is also assisting the faculty in developing the rubrics and will follow up to make sure they proceed as they should. He said the instructors have to implement the recommendations and then implement the process. ABET told us how to do this. Lew asked what the documentation looks like for demonstrating improvement. Bagley replied that they have to assess an outcome. They have 4 levels in which they've exceeded a criterion and they have to show if they are meeting it, if they are progressing toward it, or if they don't meet it at all. His target is 80% or higher of students in those two brackets. This is an example that he used, but he can consider on what can be used to improve further.

***Department Update:*** (See Attachment C)

- Alvarado reported on defining the vision and goals. He has been appointed for three years as department head. Dr. Patrick Johnson is the undergraduate coordinator, Dr. Joseph Holles is the graduate coordinator, and John Oakey is the Research Coordinator. He reported that they have created an advisory board for research. The Research Committee meets every other month to focus on research we can be good at and they talk about aiming at bigger proposals.
- Alvarado reported on faculty and staff currently in the department. See slide. He then talked about student enrollment. He said there has been a decrease in enrollment across campus but on the graduate student side, we are steady. Right now there is a 3:1 student-to-faculty ratio in the graduate program and about a 20:1 student-to-faculty ratio in the undergraduate program. However, if our enrollments grow, we will need more faculty.
- Alvarado reported that we have a small number of freshmen and that is why we need to do more outreach. He said that the Dean has been encouraging this. He said there is an unbalance and we need to improve

*Discussion Ensued*

- Alvarado reported that the department has put together a newsletter and that the web site needs some work. He also added that two MOUs have been signed with a university in Columbia and they hope to attract students from there. This will also provide research collaborations.

- Alvarado went on to talk about the departmental objectives, goals, and focus areas. He also talked about a proposed administrative/enabling structure, research and educational infrastructure and about growth needs and justification. He talked about fundraising priorities and challenges as well. You can see the slides in Attachment C.
- Alvarado reported that the department will get back one position and the emphasis will be in Carbon Engineering. He added that if the department gets more faculty, it can grow to 250 undergraduate students and his goal is to have 4 graduate students per faculty.
- Alvarado then talked about opportunities and stated there is a huge gap in industry in Controls and Automation. He said there is a big push to get more educational resources and more BS degrees in automation out there. He thinks there are research dollars out there and this can be a potential for research areas.
- Alvarado reported that they now can train students better in Process Controls now that the lab has been updated. He suggested hiring a faculty who has a lot of focus on Process Control. Stephen Ftaclas asked if there are academic opportunities and research dollars out there. Alvarado replied that there are people who are really strong in process control but we are small and we are not computationally strong. He added that there has been informal discussion to push in that direction and we can build on top of that. Ftaclas suggested that this might be a place for an APL instead of a faculty. Alvarado agreed and that they would like to hire an APL in that area. He also added that the department can partner with Electrical Engineering. Kevin Milliman added that he sees the same gap on the industrial side and by focusing on Process Control, you can build on that and form an industrial perspective. He said that most of the opportunities at the BS engineering level don't require real deep controls knowledge, but you need to understand the fundamentals. That is his take on this problem. Alvarado suggested doing a senior design project in these specific areas as well.

***CEAS Facility Groundbreaking Ceremony***

***CHE Faculty Research:***

- Dr. Dongmei Li, Dr. Saman Aryana, and Dr. Karen Wawrousek presented on their research.

***CEAS Undergraduate Recruitment:***

- Kenya Johnson reported that her main responsibility is student recruitment. She visited Purdue to meet with their recruitment team. She also works with Student Advising and advises engineering undeclared students who aren't math ready. She is also working on adapting a professional advisors program. These advisors would advise students their first two years and then the faculty would take it from there. This way the students can have faculty mentorship their last two years.
- K. Johnson reported that they are also working with collaborating with the Honor's Program where engineering students would get 9 credits of that coursework. She also does marketing and works with a marketing coordinator. She supports her coworkers with advising, scholarship, outreach, and career services.
- K. Johnson reported that she has student volunteers to help with recruiting called the Engineering Ambassadors. This year they have 15 students representing all disciplines. She travels frequently, talking to students in the classroom, pre-engineering, high math or high science classes. She travels out of state and attends STEM college fairs. She's attended the Showcase Saturday and this has been very productive. There is a new event called the Engineering Road Show and they have faculty and students who join. Their first event was in Rock Springs. The students engaged and inquired

abundantly. Michael Miller asked if this was held at the Energy Academy. Johnson replied that yes it was and there were also high school math and science students that attended. Ftaclas emphasized that it's great to target the specific Northwest. K. Johnson added that they are also targeting Texas and California. She said the cost there is higher and it takes them 6-7 years to complete their degree. There is also a great student loan crisis. Since we are ABET accredited, that helps, plus 54% of our students are debt free. This makes UW very appealing. Dr. Marjorie Bedessem asked if they recruit from Alaska. K. Johnson replied that the College of Engineering has not done that specifically but it may down the road. Bedessem encouraged targeting this state as there are a lot of similarities for students to transfer here as far as industrial background is concerned. K. Johnson added that right now resources are low, but they will consider this in the future.

***CEAS Career Services:***

- Ann Jones reported that she is now full dedicated to the College of Engineering. She still does collaborative events and uses the tools available at Career Services for job listings and job fairs. She reported that they are using a new tool called EPIC and this was implemented just this fall. It is an online supplemental learning tool that the students can use any time. This can include academic advising. There is also a milestone on creating a resume. Their goal is to have the students' think of these things earlier to engage in a form of career development. They also provide a networking piece and they have created a group in LinkedIn. They also have an alumni group for UW. Her goal is to start doing an online profile and then connect to these UW groups. She said they will also have academic advising and some undergraduate research. This is a work in progress.
- Jones handed out a career guide that they give to the students. This guide includes resumes, and interviewing for example. She said the goal is to give the students something that they can access during their career development.
- Jones reported that she took some students on the Student Trek. She invites in speakers who may think outside of the box. She buys lunch for them and the speakers give real life advice.
- Jones reported that they send out surveys before graduation and after graduation. Ftaclas asked who the top companies are that are hiring. Jones said she can pull this information for the last five years and send to the board.

*Action Item: Ann Jones to pull top hiring companies over the last five years and send that information to the board.*

***CEAS Student Advising:***

- Laurie Bonini reported her CEAS student advising duties. She added that Teddi Hofmann also works in this office and is the K-14 Coordinator and develops outreach activities, including external programs for middle school and internal programs for the engineering summer program. She also does classroom visits to various locations and takes the Engineering Ambassadors to pursue a project with them to get kids excited about engineering. She also does campus visits. She is involved with a few programs that also serve as retention opportunities for freshman and sophomores.
- Hoffman is in charge of the Freshman Convocation. She coordinates the undergraduate research program geared toward incoming freshmen. This is a scholarship program. The award is $6000 for an incoming freshman and is renewable. They do various lab tours through the engineering areas and they also do workshops. This is a top level program and the students in this program are amazing. They have high ACTs and are 4.0-GPA majors. They are the top of their classes.

- Bonini reported that she is involved with the Engineering Science program. They also have courses in various areas of the program. They work with the community colleges around the state as they partner with the transfer students so that there is a plan when they enter the CHE program.
- She reported that her office also deals with student issues like academic dishonesty. They also clear students for graduation and do the degree checks. They maintain student databases and her primary responsibility is the area of advising and retention. She advises new freshmen and the engineering undeclared students.
- Bonini reported on retention. She said they have initiated a pre-college math advising pilot. If the student is Calculus I ready, they are ready to move forward. If they aren't ready for college-level math, they get advised by their office. She works closely with these students in August and she said they were able to get about 10 ready for college-level math. They have a learning module to help them get math ready and they work through fall semester and continue to take the math placement exam. Ftaclas asked if they are allowed to declare engineering majors. Bonini replied yes they are but once they get the college math, they are then handed over to the department. Ftaclas asked if there are any admissions standards. Bonini replied no, but they are having conversations about that. Milliman asked by not screening the student, does it cause an issue. Bonini replied that they send them to Career Services to help them with this.

*Discussion Ensued*

- Bonini reported that they also do academic counseling for students who get on probation. They also have an early alert program which was instituted a few years ago. They ask the faculty to report when the students are in their 3rd week of classes. This is geared toward freshmen and sophomores. It's a way to say you are not passing and it's done early enough for the student to make some changes. It gives them guidance on what they can do to get a better grade.
- Bonini reported that she also does advising training for new advisors. To help students in being successful, they have Power Groups that provide learning communities for incoming freshmen. This is where they build a common first year semester schedule. The idea is the students are in courses with the same students, which helps them get introduced to a larger student community and build relationships. They also provide engineering floors in the dorms. They have an RA who lives on one of these floors who is charged of doing special programming other than traditional residence hall activities. Bonini reported they also have a summer bridge program for students who aren't quite up to Calculus level but could be. They target students in the college Algebra/Trig level, but aren't quite there.
- Bonini also works with scholarships. They provide normal donor scholarships through the Foundation to offer continuing students $340,000 in those scholarships. In the undergraduate research scholarships, they offer $330,000 from Tier I money.
- Mary Shafer-Malicki commented that she likes how they are looking for new students. It's great to hear they are going to middle schools, etc. She asked what the biggest challenge or barrier to get kids in the door is. Bonini feels like it is intimidation, essentially the perception that math is scary. She said it's helpful to have people going out early and getting them excited about the fun things you can do with engineering. Just getting the message out is helpful. Shafer-Malicki asked if the cost intimidates them. Bonini replied that people don't realize what the cost here is. We have to let them know that students who come here generally have no debt and they get their education paid for. Ftaclas added that nontraditional students have a higher rate of success. He thinks to

add some sort of financial training would be helpful. He said there is something missing about basic financial understanding and there needs to be a venue to take away that fear.

***CHE Undergraduate Curriculum:*** (See Attachment D)

- Dr. Patrick Johnson reported that the University Studies Program was updated in 2015 and they updated the curriculum with the USP 2015. He said they've had to fine tune the curriculum this year.
- P. Johnson reported that they've talked about how to retain and recruit students. He said students are saying that we don't have a biochemical program and they don't understand due to the name. This has been a continuing problem. Ftaclas asked with bioengineering, do we have a focus. P. Johnson replied that we have concentrations and we are developing bio, materials science, grad preparation and environmental. Ftaclas asked if you have the concentration, perhaps offer a BS in Bioengineering. Another option would be to go through with the name change. P. Johnson replied that there would be accreditation issues with another major and it's not easy. He reported that CSU doubled their enrollment just by changing the name. This would be the place to bring up the enrollments. Bedessem asked if the concentration is highlighted on the web page. Alvarado replied that we are working on this. Michael Thomas added that this can be put on a resume as well and you don't have to have the degree.
- P. Johnson reported that the department has implemented a "C-" or better policy for all prerequisites. This has been approved by the faculty and will be implemented spring 2017.
- P. Johnson showed the board the revamped curriculum. See slide.

*Discussion Ensued*

- He talked about the new courses and new directions. Bagley added that active learning has really enhanced the curriculum as well. P. Johnson reported that they received funding to bring active learning lab equipment ($150,000) in for bio-related equipment. He is teaching biomaterials and he will integrate labs into that class. This will be the case for Biomedical Transport and Microfluidics experiments in following years.
- P. Johnson reported that the Student Innovation Center will go into the new building, but will be temporarily located in the Library. They will have space for a student-oriented machine shop and for student entrapaneurship. This provides opportunities for design classes and the engineering curriculum as a whole.
- P. Johnson asked for the board's input regarding the curriculum. Ftaclas stated that ISA has amazing resources for undergraduate automation for CHE courses. He also asked what is being done about simulation since John Myers retired. P. Johnson replied that Dr. David Bell and his PhD student, William Schaffers have taken this over. He added that this is crucial and is a key aspect of our curriculum. Alvarado asked how we bring somebody in who can do this if we don't have it. P. Johnson suggested hiring a retired industrial professional who can teach those classes. He said they need people like this. Thomas asked where the college sits on courses like this. P. Johnson replied that right now they have to embed it. Bagley added that there is also a Business Ethics course that they encourage students to take.

***Society of Women Engineers Chapter:*** (See Attachment E)

- Katie Hopfensperger, SWE president, reported that their goal is for women to stay in Engineering. They do recruiting events and they interact and talk about their society at their first meetings. They

talk about what they do and why they want them to join. In the past they have participated in Safe Treat and in Engineering week in February. They speak in classrooms and encourage students into engineering fields. They attended Engineering girls day. Shafer-Malicki asked where they go. Hopfensperger replied that stay local and have also visited Hanna, Wyoming. They also have had some middle schoolers come to campus.

- Hopfensperger reported that they also hosted a student/faculty banquet and had 72 people show up. Local industry men and women came and also Dean Pishko and President McGinity. She said it was very successful.
- She reported that they attended the national conference and that this is the largest job fair that they attend. It's a great opportunity to get involved with networking and is a beneficial experience. She said it also gets the women integrated into the group for SWE, it's very motivating to get involved as well. She said this year they are taking 8 people and have received funding for them. They have also participated in lots of professional development workshops which can include managing stress and managing finances for example.
- M. Thomas asked what the barriers are for getting more women into the work field and asked if there are more barriers today than are expected. Hopfensperger replied that it really depends on the company and on the individual. She added that in terms of our society, sometimes students think it's a lot of time involved or being a feminist. She said they have been trying to change that image. Ftaclas asked if they do high school visits and if they have resources and interest to expand out to get more coverage in the industrial parts of the state. Hopfensperger replied that she is an outreach ambassador and they are working toward this. She works alongside the K-14 Coordinator. Ftaclas encouraged them to approach the board for funding.
- Bedessem asked in respect to the freshmen, what are the reasons for girls to drop out of engineering. Lissa Margharos replied that the main reason is just related to interests. She doesn't feel that it has anything to do with the environment. She also feels that students get intimidated by Calculus I, Calculus II, and Statics. Hopfensperger added that they have a high rate of women who have stuck with the programs.

*Discussion Ensued*

- Bedessem added that a lot of students switch majors because they aren't sure what they are going to do when they finish. They can't see the connection. She said it's a fundamental building block and they can't see the actual end point of the job. She said they aren't motivated with competition and need feedback from the professors as it isn't clear. Margharos said she agrees and this is one of the reasons she got involved with SWE. This helped her to see what kind of jobs were available. Hopfensperger added that in the fall they have the Industry Panel and this helps the students to see their options. Bedessem asked if they have a SWE professional. Hopfensperger replied yes and she is working here in Laramie. She has been coming to their meetings and has been offering her support.

***AIChE Chapter:***

- William Duncan, AIChE Chapter President addressed the board. He reported that AIChE is a professional student group that provides networking through a professional business style and they look into careers. He said their biggest issue is to get enough people to show up. He said the ES 1000 courses require the students to attend 2 professional society meetings, but this is mandatory

to get a grade. After that, no one shows up. He said that most of their officers are juniors and seniors and his goal is to involve all of the younger students and get them to nationals. Those are the students who potentially will take over the society.

- Duncan reported that their big fundraiser is the Industry Dinner and with the downturn in the economy this year, there was no interest. He'd like to talk with Ann Jones and make it interdisciplinary and then maybe more companies will decide to go.
- He asked the board for networking opportunities and will ask them to come and give a presentation and have a Q&A with the students. He said that Skype could also be set up to allow the board to present without the travel expenses. This would be beneficial for the students to offer different fields to work with and provide advice and guidance.
- Ftaclas Added that in good years there has always been a gap in getting traditional process engineering roles. Most go to an upstream role and he's not sure what is slipping there. Duncan added that he would like to go into processing and not the upstream side. He would like to do consumer products as well but there isn't any representation at the career fairs and the best way to make these contacts is to attend the AIChE conferences. He added that the spring conference is the best one to go to. Ftaclas emphasized that the best people he's met were from walking around the Expo and just talking to people.

*Discussion Ensued*

- Duncan reported that he's encouraged the faculty to bring in guest speakers to actually see how things work. He said that students feel they are limited as they don't see other opportunities. Bagley agreed that we need to go out and get some of these consumer product companies to come in. He said we need to get a broader base of companies who know the value of Chemical Engineering. Shafer-Malicki added that job placement is a critical piece of this group and the university's outputs. She said she would like to see us take another look at how we get the kids out there. She asked Duncan if they had enough funding, could they get enough kids to go to the Expo.

*Discussion Ensued*

- Milliman suggested reaching out to the local professional section of AIChE. He said they are small and not super active, but they do have meetings. He added that they recognize one key role is to hook up with the student societies, and if we can build that bridge, it would be really helpful. Bedessem asked if they have a professional affiliate. Milliman said he thinks it's currently vacant but he will check on it.

*<u>Action Item</u>: Milliman to check to see if there is a local professional affiliate in the local section of AIChE and report back to Duncan and the board.*

- Duncan said that he's been a member since he was a sophomore and this is his 5th year and he's never heard of one. Milliman suggested posting at the professional level that UW is looking for people to talk with them. Duncan agreed and added that this will help the students get to know these people and build relationships.
- Bagley suggested that since we have CHE embedded into the sophomore year that they could go into the classes and start giving a 2 minute announcement to help get those sophomores engaged.

Duncan added that the faculty could also come and speak at their meetings. Milliman suggested getting the equipment suppliers to come and present their ware. It's something tangible. Ftaclas suggested getting ahold of Darren Mourre. Milliman encouraged Duncan to reach out to the board for specific requests.

***Board Administrative Business:***

- Reichl presented a list of active members on the board. Milliman motioned that the board membership be approved. All were in favor.
- Regarding the board charter (Attachment F), Reichl suggested that the board read through it and then send him comments on changes or revisions via email. Then the charter would be reviewed and presented for approval at the next meeting in the spring.

*Discussion Ensued*

- Election of Officers: Reichl stated that we have 3 choices. We can restart the 2 year term starting this year, we can renominate and re-elect, or we can continue the process and the next academic year, Ftaclas would become the chair and elect a new vice chair. Milliman stated that he's fine with continuing the process so there is continuity. Lew motioned to go ahead with the current clock with Reichl serving for one more year. Milliman second the motion and all were in favor. Reichl stated that they will take nominations at the next board meeting in the spring.
- Reichl asked Alvarado what the board can help the department with. He suggested fundraising and additional membership. He said when the board was first started, there were committees and he suggested creating a committee for each of these. They would then elect a chair that would provide a report at the next meeting. The chair and he would then meet with Alvarado to discuss the progress of those things. Milliman added that as we have specific tasks, this would make sense. Ftaclas added that we have a framework for subcommittees that are appointed by the chair. See Article 2 section 7. Shafer-Malicki agreed that fundraising and additional membership are two important areas. She asked what do we need to do and what is the message. Milliman replied that source and use of funds. Bedessem motioned to develop the fundraising subcommittee and Ftaclas second the motion and all were in favor. Shafer-Malicki motioned to develop the membership for nominations committee. Ftaclas second the motion and all were in favor.
- Reichl asked for volunteers to chair the fundraising subcommittee. Shafer-Malicki volunteered for this committee. Milliman volunteered for the membership committee. Bedessem motioned to approve Shafer-Malicki as the chair of fundraising. Ftaclas second the motion and all were in favor. Ftaclas motioned to nominate Milliman to be the chair of the membership committee. Lew second the motion and all were in favor. Reichl & Bedessem volunteered to serve on the membership committee. Ftaclas and Lew volunteered to serve on the fundraising committee. Thomas left the meeting early and the board elected to put him on the membership committee.
- Regarding new membership, Milliman asked the board for their thoughts on what the vision for membership should be. He asked for target sectors and also representation of UW graduates. Bedessem stated that the charter is okay with 50% UW graduates. Milliman replied that he thinks this is appropriate. He also thinks it's interesting that there is a wide variety of sectors and not one dominant. He said we have a decent representation in phosphates and oil and gas. He asked if we they should try and reach out to other sectors. Reichl added that the students are interested in electronics, food, biochemical, biotechnical, etc. These would be good targets and that would help

with fundraising. Alvarado reported that an alumni from Electrical Engineering came and talked with him from Micron. He offered them to visit and have a broader conversation. Bedessem suggested having companies that make wastewater treatment products as we seem to be doing research in that area. Alvarado suggested focusing on processes and suggested approaching Proctor and Gamble or other markets or sectors that are very much impacted by CHE. Consumer products would be a good area. Milliman asked what criteria do we want. Reichl suggested geographic diversity.

*Discussion Ensued*

- Ftaclas stated that we are short on pharma and general. He said most end up as process engineers and we have zero from EFPCM. Milliman agreed this would be good. Ftaclas also asked how many we have as a unit process engineer and what could their contribution to the board be. Milliman stated that at one point discussion was keeping a range of career experience and asked if that would be of value. Shafer-Malicki replied that yes she thinks so and that you'll naturally get people in industry management over the years. She said the higher ups can unlock money, job training and job placement.
- Reichl asked if there is an interest in more faculty. P. Johnson suggested contacting David Marr from the School of Mines. He was Oakey's advisor and that would be worthwhile. Alvarado agreed that this would be helpful in telling us what to do and what not to do. Reichl suggested talking with the faculty to see what external faculty would be beneficial.
- Lew suggested soliciting someone as a regulatory like in the PSM field. P. Johnson stated that Bagley would have some suggestions there.

***Feedback and Wrap-up:***

- Milliman commented that he really enjoyed the hands on with the webinar and also the groundbreaking ceremony. He asked what prompted the webinar. Alvarado replied that this was his brain child. He commented that we need to reflect our culture and find a way to communicate a clear message. A message to show that Chemical Engineering can provide an exciting opportunity. Reichl added that he was impressed by the vision and for a small department, there is a lot of excitement.
- Milliman asked how the board can help with staffing. Alvarado replied to convey that information and communicate to the Dean. He said our main issue is to allow our faculty to flourish but it's difficult to do if our enrollments increase. Milliman replied that they can help by delivering a message to the Dean about the need for more faculty specifically and how they can help with fundraising and how this would be helpful. P. Johnson asked if any of the board go to alumni events. Shafer-Malicki replied that she has talked to President Nichols about helping CHE to get more faculty. Milliman suggested drafting a letter from the board showing the ratios. Reichl also suggested talking with the Dean face to face at the meetings.
- Milliman wanted it noted in the minutes that CHE is running lean on faculty compared to other departments on the ratio of undergraduates and graduates and there are no near term positions. As the drive for further enrollment, we recognize and recommend as our role as the Advisory Board that we advise that you get more people. Reichl recommended working on this for the next meeting. He will then deliver this in person. This will be discussed at the next meeting.

*Action Item: Alvarado will provide the board with a list of challenges that the board can think about and come up with suggestions.*

Meeting Adjourned.

Minutes typed by Heather Warren.