



**CSW**  
Corporation for a  
**Skilled Workforce**

**Good Jobs. Thriving Communities.**

# **Idaho State University Energy Systems Technology and Education Center (ESTEC)**

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**Providing Opportunities for Women in Energy  
Related Careers**

**Interim Evaluation Report**

**March 2019**

## Summary of Key Findings

Key Findings are provided across all data collection activities included in this report.

### Background

In 2015, the National Science Foundation awarded \$796,639 to the Energy Systems Technology and Education Center (ESTEC) at Idaho State University for the Providing Opportunities for Women in Energy Related (POWER) Careers project. This project aims to address the issue of underrepresentation of women of all ages and ethnicities in ESTEC, as well as the significant under-representation of women across the engineering technology sector of the energy workforce.

### Recruit and enroll women age 25 years and older into ESTEC AAS programs.

- First semester focus group students cited salary potential, and interaction with POWER Careers staff, and the hands on nature of the work as reasons for enrolling.

### Retain students to graduation with a supportive student learning community and place graduates in professional jobs

#### Interactions with POWER Careers Staff

- All students surveyed interacted with POWER Careers staff last year. Over half interacted with staff more than 20 times.
- Almost all survey respondents (14) were satisfied with the level of interaction they had with POWER Careers staff. Only 1 respondent felt the level of interaction was not a good fit. Students stated that staff are always available and that they provide helpful resources and are concerned with students' success.

#### Participation in POWER Careers Activities

- Students in the focus groups appreciated of the number of activities available and mentioned specifically valuing opportunities to speak with graduates, industry speakers, conferences, the ability to tour facilities, and PEP classes.
- All survey respondents attended POWER Careers activities with most students (10) attending 11 or more.
- Students were more likely to attend activities relating industry presentations or contacts.
- Most survey respondents (12) stated they attend and enjoy Power Careers activities.
- Most survey respondents spoke favorably of POWER Career activities, noting that they were a good fit, fun, or helpful. Some respondents acknowledge their schedules or other barriers impacted their attendance.
- The site visit found POWER Careers staff to be warm and friendly to students including being familiar with all students by name.
- Many of the survey respondents (11) were participating in PEP during the Fall 2018 semester, and of those students, over 80% stated the PEP meetings were "extremely useful." Positive themes identified in responses include providing support for the job search process and help with adjustment to college and tools for success. One (1) participant felt some of the information included what she already learning in middle and secondary school however.



### Challenges Faced in the Program

- Students in the focus groups acknowledged that finances were one of the biggest challenges they faced. They also spoke of family obligations and some administrative hurdles to enrolling, such as transferring records, enrolling late, or administrative holds.
- Students in the focus group also said that coursework was challenging and that male students had more basic awareness of tools and machinery upon starting classes.

### Challenges Faced as a Woman in ESTEC and in the Industry

- Just over half of survey respondents felt they faced challenges that were not issues for their male counterparts. They included feeling isolated from men and finding it easier to connect with women and coming into the program with the same knowledge of tools.
- Students in the focus group also mentioned that the men in their classes had a higher basic awareness of tools and machinery.
- Staff and instructors noted that women face family obligations outside of the classroom, and one staff member noted that men may have had more exposure to mechanics before entering the program.
- Some interviewees also noted that some tensions have emerged among male students who feel the women are being given extra advantages or privileges.
- While some differences were noted related to challenges, staff and instructors stated there were no differences in terms of base knowledge or aptitude to succeed in the field. And, that women tended to be more willing to advocate for themselves and ask for help, which some attributed to POWER Careers.

### Personal Growth

- Students in the focus group acknowledged that since starting the program they have gotten better at asking for help, they have increased confidences, and that they saw themselves as role models for women in energy careers.
- Some interviewees acknowledged that they had personally been impacted by the project in terms of their own outlook on diversity and inclusion.
- Some interviewees said that they have seen changes in faculty and male students in terms of cleaned up language and then also perceptions.

### Support Received

- All survey respondents who answered this question (13) stated that POWER Careers helped them overcome challenges during the Fall 2018 semester.
- Over half of survey respondents said that POWER Careers helped them by providing them with support, linking them to other support, or in asking for help and support. Four (4) respondents stated they helped them with topics related to adjusting to college, and 2 respondents said that they helped them with the job search process.
- According to students in the focus groups, the key strengths of POWER Careers is the deep personal connections project staff makes with the students as well as the commitment and knowledge of the staff.
- Staff and instructors see the value in supporting and encouraging ESTEC's female students through POWER Careers, including through the connection to resources.



- All survey respondents to the question (14) felt it was important to interact with other women in the program.
- Staff and instructors noted there is value in connecting with other women in the program.

#### Additional Support Desired

- First semester students in the focus group desired more information to help prepare them for their courses and the transition to fulltime school, including help with budgeting, materials and book lists available before classes, and assistance mixing up or assigning lab partners.
- Third semester students in the focus group mentioned a get together so that they could reengaged after going separate ways in classes. They also would like to meet more hiring managers.
- Survey respondents noted a need for more industry-related events and additional assistance with resumes.

#### Promote a culture of mentorship to encourage women who pursue STEM technical careers.

- Students in the focus groups mentioned knowing other women in the sector was important to them. Female role models and mentors included friends or family in energy careers, Alumni met at POWER Careers events, and their ESTEC peers.
- Students in the focus group discussed being role models to each other and others outside of ESTEC.
- Survey respondents were asked if they provided support to other women in the program, and 11 said that, yes, they helped support their female peers. Ways of showing support included helping with tutoring or assignments, providing moral or emotional support, and providing other types of help.
- All but 1 participant said that they planned to stay involved in POWER Careers past graduation. Students explained that they planned to stay involve because of a desire to help others, to continue to feel part of the group, or because they want continued access to resources.

#### Project Implementation and Sustainability

##### Perceived Value of Diversity and Cultural Shifts at ESTEC

- Bringing more women into ESTEC and the energy field was seen by all interviewed staff and instructors as a positive. Diversity brings more perspectives to the table, creates a more professional environment, and industry is asking for more diversity.
- Some staff and instructors stated that there were no substantive changes in ESTEC as a result of POWER Careers and only that this has provided a “facelift.”
- More commonly, though, staff and instructors felt that there was a cultural shift at ESTEC as a result of the project.

##### Challenges Remain in Perceptions of Gender in Industry and in Society

- Staff and instructors interviewed acknowledged that male dominance is still a factor in industry through workplace cultures and the micro messaging sent to women about what jobs are and are not a good fit in this field. Despite this, though, some interviewees stated seeing tremendous growth in female students over the course of the program and that they are resilient and confident.



### Identified POWER Careers Project Lessons Learned

- The effectiveness of having a program-based initiative (as opposed to a larger initiative targeting all students in non-traditional fields, for example).
- The importance of institutional buy-in.
- The need to dedicate more time to building both industry and mentor relationships.

### Identified POWER Careers Project Areas for Improvement

- Faculty and staff wondered if there were ways to bring on more female instructors or have more female speakers, such as incentives. They acknowledge hiring instructors is difficult across all genders since instructors take a pay cut by leaving the private sector.
- Staff said that more time to keep track and stay engaged with graduates would be beneficial.
- It was also acknowledged across interviewees that continuing to engage industry is important and that perhaps a more active relationship with these partners is needed than the current relationships.

### POWER Careers Sustainability

- Many staff interviewed felt that POWER Careers could use another year or two to get established and document lessons learned before attempting to replicate the high-touch model elsewhere.
- A few interviewees felt it was necessary to expose younger women to energy careers and wondered if POWER Careers could incorporate K-12 outreach in its work.
- The next logical step for many is to expand POWER Careers from ESTEC to the wider College of Technology to provide women in those nontraditional education tracts a similar level of support.
- In addition to utilizing institution (i.e. Perkins) and grant funding, some administrators and program staff suggested looking to industry for financial support of the POWER Careers program since they are benefiting from the increased pipeline of female graduates.



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## Corporation for a Skilled Workforce

Corporation for a Skilled Workforce (CSW) serves as the external evaluator for this project. CSW is a 27-year-old national 501(c)3 organization that specializes in research and evaluation, planning and initiative development, and implementation and sustainability. CSW performs research, planning, evaluation and strategic advising, and has expertise in working closely with postsecondary institutions and workforce partners to develop a shared vision and roadmaps to success.

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## Purpose of the Report

This report was written by CSW to provide a summary of results from evaluation activities conducted to date during the 2018-2019 School Year. Activities include a site visit, 2 focus groups, 12 Key Informant Interviews, and the Fall 2018 Student Engagement Survey. These results will be shared with key stakeholders to inform program development and next steps of the evaluation.

This report is organized by the following POWER Careers project goals and areas of interest:

- Recruit and enroll women aged 25+ into ESTEC AAS programs
- Retain students to graduation with a supportive student learning community
- Place graduates into professional jobs
- Promote a culture of mentorship to encourage women who pursue STEM technical careers.

The following goal was not measured during this year's evaluation activities and is not reported on:

- Strengthen ESTEC partnerships with energy employers to further careers for women

The following was also identified as topics of interest for the evaluation and included in the report:

- Project Implementation and Sustainability



## POWER Careers Project Background

The POWER Careers project is housed in the Energy Systems Technology and Education Center (ESTEC) at Idaho State University (ISU). ISU's College of Technology is charged by the State of Idaho to provide technical education in eastern Idaho. The College primarily grants Associate in Applied Science (AAS) and technical certificates. In 2006, the ESTEC was formed following an Idaho National Laboratory study that identified a regional and national need for energy industry workers with leading edge technical skills. The study noted that the aging workforce and ongoing innovation in the energy industry required a transformation in new worker training.

ESTEC's mission is to cultivate the people, educational resources and applied research capabilities necessary to improve local, regional and national availability of trained workers in occupations that support the construction, operation and maintenance of current and future energy facilities. ESTEC's educational programs culminate in a two-year AAS degree that prepares students for entry-level professional technical positions. ESTEC's approach includes involvement of community organizations to communicate with, inform, and recruit non-traditional students including ethnic minorities, women, veterans, and other individuals and groups not currently well represented in the energy workforce.

In 2015, the National Science Foundation awarded \$796,639 to ESTEC for the Providing Opportunities for Women in Energy Related (POWER) Careers project. This project aims to address the issue of underrepresentation of women of all ages and ethnicities in ESTEC, as well as the significant underrepresentation of women across the engineering technology sector of the energy workforce. At the time of the grant proposal, women represented about 8% of students in ESTEC energy programs and had never exceeded 15%.

### Project Goals and Objectives

The over-arching mission of POWER Careers is to achieve equity for women in energy technology career fields by increasing their successful participation in high quality, proven energy systems programs, using strategies that will help retain non-traditional women students through graduation and placement into professional positions. Project efforts will primarily target non-traditional aged women (and will include under-represented populations in southeast Idaho—Hispanics/Latinas, American Indians, and military veterans). Female students of all ages are welcome in the project.

POWER Careers aims to employ a continuum of supports and activities across the student experience, including mentors in the form of successful ESTEC graduates. The project has indicated that it will identify and address the recruitment challenges of a technical college serving a rural area, in part by working closely with community agencies that are in contact with potential students. The project also intends to engage industry in efforts to build a more diverse workforce and create workplace environments that are welcoming to female technicians.

The POWER Careers project has identified their grant and post-grant participant outcomes as:

- 50 women enroll in ESTEC over 3 years (these students will have met math and English entry requirements)
- 44 women begin coursework as planned
- 40 women will successfully complete the first semester of an ESTEC program
- 35 will successfully complete an AAS degree, 18 will complete during the grant period and an additional 17 will graduate with an AAS degree on-time but after the grant period (graduation date for these students will be Fall 2019 through Fall 2020)





- 33 women are placed in professional positions after graduation

To achieve these participant outcomes and overall project objectives, POWER Careers has outlined **five key goals**:

- Recruit and enroll women aged 25+ into ESTEC AAS programs;
- Retain students to graduation with a supportive student learning community;
- Place graduates into professional jobs;
- Strengthen ESTEC partnerships with energy employers to further careers for women; and
- Promote a culture of mentorship to encourage women who pursue STEM technical careers.



## Methodology

### Data Collection

#### October 2018 Site Visit

Evaluation staff members attended the ESTEC Campus for two days. This visit consisted of:

- A tour the ESTEC facility and the College of Technology's new building
- Interviews with POWER Careers project staff, key administrative personnel, and faculty
- Focus groups with POWER Careers students
- Observations of POWER Careers students during the Super STEM Girls Conference
- General observations of ESTEC and POWER Careers

#### Student Focus Groups

Two (2) focus groups were conducted during the October 2018 Site Visit, including 1 focus group with 1<sup>st</sup> semester students (8 participants) and 1 focus group with returning students (7 participants). Response rates are 57% and 88% respectively. The first focus group gathered information on what lead them to enrolling into the program and their initial impressions a month into the semester. The second focus group focused on interactions with industry contacts and their experiences with mentors and role models.

#### Key Informant Interviews

Twelve (12) staff members were interviewed during the October 2018 Site Visit, including 4 faculty, 4 (all) project staff members, and 4 administrative staff members. Semi-structured interview protocols were designed to capture feedback on overall understanding of the project's goals and values, touchpoints with the project, significant changes notices, key strengths and areas for improvement, implementation, and personal impact.

Staff were divided into three categories: POWER Careers Project Staff, College of Technology Administrators, and ESTEC Faculty. Project staff included all staff members associated with POWER Careers, including the original PI (now retired). Administrative staff included the Dean and Associate Dean of the College of Technology, the Director of ESTEC (also a faculty member), and a senior member of the College of Technology's Marketing and Recruitment team. Faculty represented taught both introductory and advanced courses, representing many of ESTEC's energy concentrations. Four (4) staff members were interviewed in each category for a total sample of 12 staff members interviewed.

#### Fall 2018 Student Engagement Survey

A survey was conducted with ESTEC female students (POWER Careers Participants) enrolled in the 2018 Fall Semester to understand their level of engagement with the POWER Careers Project. The survey was conducted between December 2018 and January 2019.

The survey was sent to all students (21) who attended during the semester. Fifteen (15) POWER Careers students responded for a response rate of 71%.

**Table 1: Current Semester Enrolled In**

Semester	Number of Respondents
1 <sup>st</sup>	9 (60%)
3 <sup>rd</sup>	6 (40%)

### Data Analysis

Quantitative data were entered and analyzed using Microsoft Excel and Qualtrics. Descriptive statistics, such as frequencies, were utilized. Qualitative data were coded manually for themes. Quotes are provided without alteration in **grey** with the exception of minor spelling or grammar edits for clarity.

### Limitations

While the smaller N impacts the number of students available to participate in data collection for the evaluation, the response rates from each data collection activity were encouraging.



# Detailed Evaluation Findings

## Data Collection Background

### Differences in 1<sup>st</sup> and 3<sup>rd</sup> Semester Responses

Though the questions asked in the two focus groups differed, it appeared that first semester students were less likely to bring up challenges relating to gender in the program. When asked “Did being a woman in this program in a predominately male dominated field give you any pause or hesitation when you were thinking about enrolling?” the students responded in a collective “no.” The challenges they cited were more often academic in nature, compared to third semester students who were more comfortable talking about gender.

### Differences in Perspectives by Staff Role

Unsurprisingly, the perspectives staff have of POWER Careers and the interactions they have with the project are highly influenced by their roles.

Administrator level staff were more likely to discuss the possibility of scaling or expanding POWER Careers beyond ESTEC (for example, to other programs at the College of Technology). Whereas, project staff would like to see expansion, but felt that they needed more time to establish the program at ESTEC, especially with their current resources and staffing levels. Administrators also brought up overall enrollment trends and marketing campaigns as benefits of POWER Careers, while faculty and program staff tended to talk more about student-centered topics including increased confidence and community building among female students.

Most faculty said they did not interact with female students any more than male students, excepting for one who attends occasional POWER Careers social events.

Female staff were more likely to attend POWER Careers social events than male staff, with a few of the female staff citing this was because of their personal affinity to supporting women in non-traditional fields. One respondent indicated she attends these events in the beginning of the year to “show [female students] there is support [at ESTEC].”



## Site Visit Observation Detailed Findings

### ESTEC Observations

Most of the site visit took place on ESTEC's campus where evaluators observed interactions between students, faculty, and staff. It was evident that there is a tight knit community at ESTEC that was alluded to and confirmed in interviews and focus group discussion with staff and students. CSW saw staff greeting students by name, students dropping into POWER Careers office for impromptu advice, an alum attending an event dropping in to say hello, and faculty stopping to check-in with staff. POWER Careers staff appeared to be very warm with students. Most people in the building were aware that the evaluators were coming to visit POWER Careers which underscored the level of shared communication in the program.

While coming and leaving the focus groups with the female students, the evaluators did notice some male students looking towards the group with curiosity. This dynamic was brought up by some project staff and administrators who said that there are some men in the program who feel that female students are receiving preferential treatment.

Evaluators also toured the ESTEC labs where they saw students working together in pairs to solve various technical problems. The lab sizes were small enough that instructors could guide pairs with one-on-one attention. There were a few women present in the labs observed, and no differences were noticed in how they were working in comparison to the other students. Many of the lab pairs working together were mixed gender.

### Super STEM Girls Conference

One day of the site visit overlapped with the Super STEM Girls conference. The event brought in local eighth graders to expose them to STEM programming at ISU, including introducing them to energy careers and the options available at ESTEC. The Conference was organized by the Center for New Director in cooperation with ESTEC. While it was not an event organized by POWER Careers, many POWER Careers students participated in technology demonstrations to the middle schoolers. Except for male faculty who led some of the demonstrations, all the staff and ESTEC students participating in the event were women. One (1) female alum returned to attend the event as well.

### College of Technology Observations

Evaluators also had the opportunity to tour the newer facilities at the College of Technology, which houses the College's Dean's office, business operations, marketing and recruitment team, and a small number of programs such as robotics. The facility is substantially larger than current ESTEC facilities and is currently planning a massive renovation. Part of the renovation may include moving ESTEC from its current location to up the hill, though it sounds like this move is still uncertain and is depending on adequate funding and planning. The benefits of the move would be providing ESTEC with space to be able to accommodate more students, and evaluators heard feedback that some of ESTEC's labs and classrooms are approaching capacity. It would also be beneficial for ESTEC staff to have closer proximity to College of Technology administration, as it may form more cohesion.

Evaluators did have questions around accessibility and transportation to the College of Technology campus if ESTEC were to move. The current home of ESTEC is in the main area of the ISU campus and close to the city center. The College of Technology facility is a stand-alone building set atop a hill somewhat removed from the rest of campus. Questions around whether there will be adequate parking or buses to transport students should be considered. Budgeting for parking, gas and transportation was



a challenge commonly cited in conversations with POWER Careers students, and this challenge could be exacerbated if ESTEC were to move to a more remote location.



## Recruit and enroll women aged 25+ into ESTEC AAS programs

### Reasons for Enrollment

Enrollment questions were only posed to students in the first-semester focus group, as continuing students had been asked similar questions during previous data collection efforts.

First semester focus group students were asked to share how they came to enroll at ESTEC. The most commonly cited reason for enrollment was the **salary potential** in energy careers for a two-year commitment:

“The amount that you can make for the time you go to school...I couldn’t even make comparably the same amount of money [with associate degree respondent already had].”

“I Googled...careers, best money, least-amount of school. And the nuclear program was one of the five programs that popped up.”

“I thought it was really cool that it was just two years and it was a packed program.”

**Interaction with program staff** was also important. Students spoke about how they were surprised by how proactive staff was in following up with them to talk more about the program. **Tours** also played critical a role in convincing students that ESTEC was the right program for them. Seeing **the hands-on aspect of the program** was a draw.

“They showed me the machines, and at first sight I fell in love with those machines. I was thinking I really want to get to know these and just fiddle with them and see how they work.”

“[I toured] the fourth semester lab...this is like your goal, what you’re going to be doing at the end of these two years which really isn’t even that long. It’s some crazy intense stuff down there. And it’s kind of cool, like yeah I’m going to be able to do all this.”

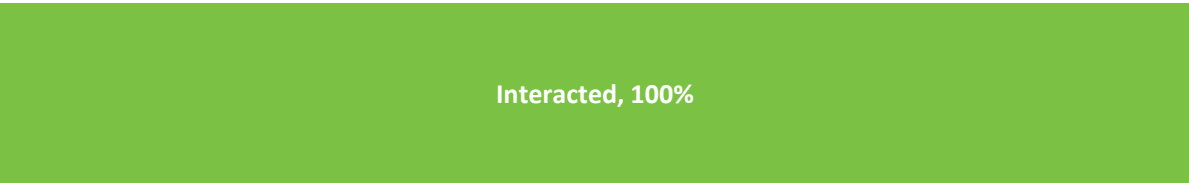


Retain students to graduation with a supportive student learning community and place graduates in professional jobs

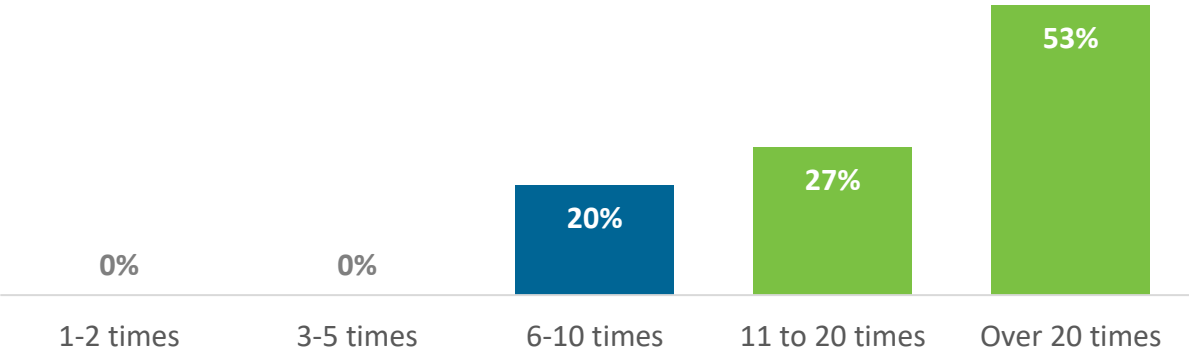
POWER Careers Students’ Interaction with Staff

POWER Careers students were asked to explain their interaction with staff so that staff could gauge where they could improve or tailor their outreach. All students interacted with staff, with most students interacting very frequently with staff over the 2018 Fall Semester. Students, on the whole, were satisfied with the level of interaction.

All survey respondents interacted with POWER Careers Staff within the Fall 2018 semester.

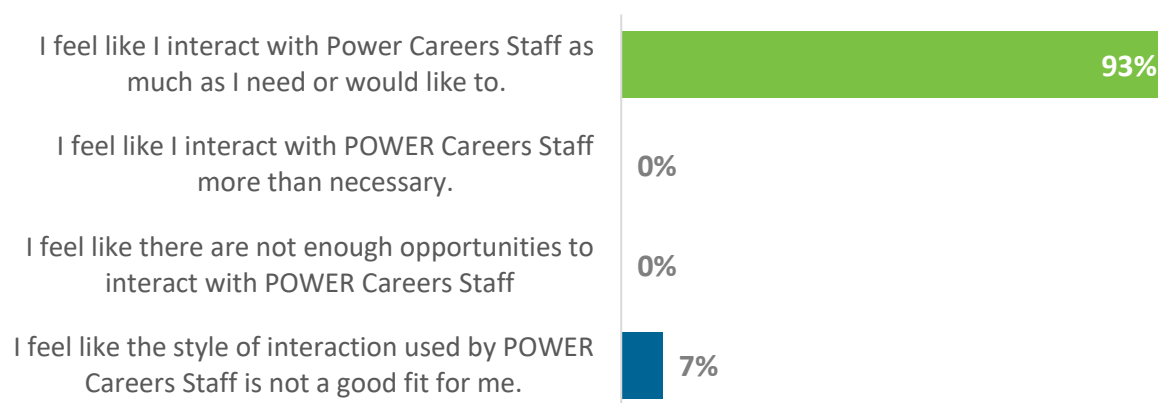


Most (80%) students interacted with Power Careers Staff eleven or more times over the academic year. Over 50% of students interacted with staff over 20 times.





**Over 90% of respondents were satisfied with the level of interaction with POWER Careers Staff. None felt they interacted too little.**



### Activities Offered

The students in both focus groups **appreciated the number of activities** offered by POWER Careers, even if many students could not attend on a regular basis. **Knowing there were events occurring on a regular basis was valued.**

Focus group students agreed that the level of communication alerting students to these events was seen to be the appropriate amount.

“[The level of communication is] enough to keep us informed and to where I don’t feel like I don’t what’s going on and I have all these opportunities.”

### Students Attend and Look Forward to Industry-Related Activities the Most

The opportunity to meet individuals in industry, whether ESTEC graduates or employers was important to students. A few of the first-semester focus group **students spoke of the ESTEC graduates** they met at POWER Careers summer events, and that they have maintained those relationships as they entered the program. **Industry speakers, conferences and the chance to tour facilities** were the types of events the first-semester students were looking forward to the most.

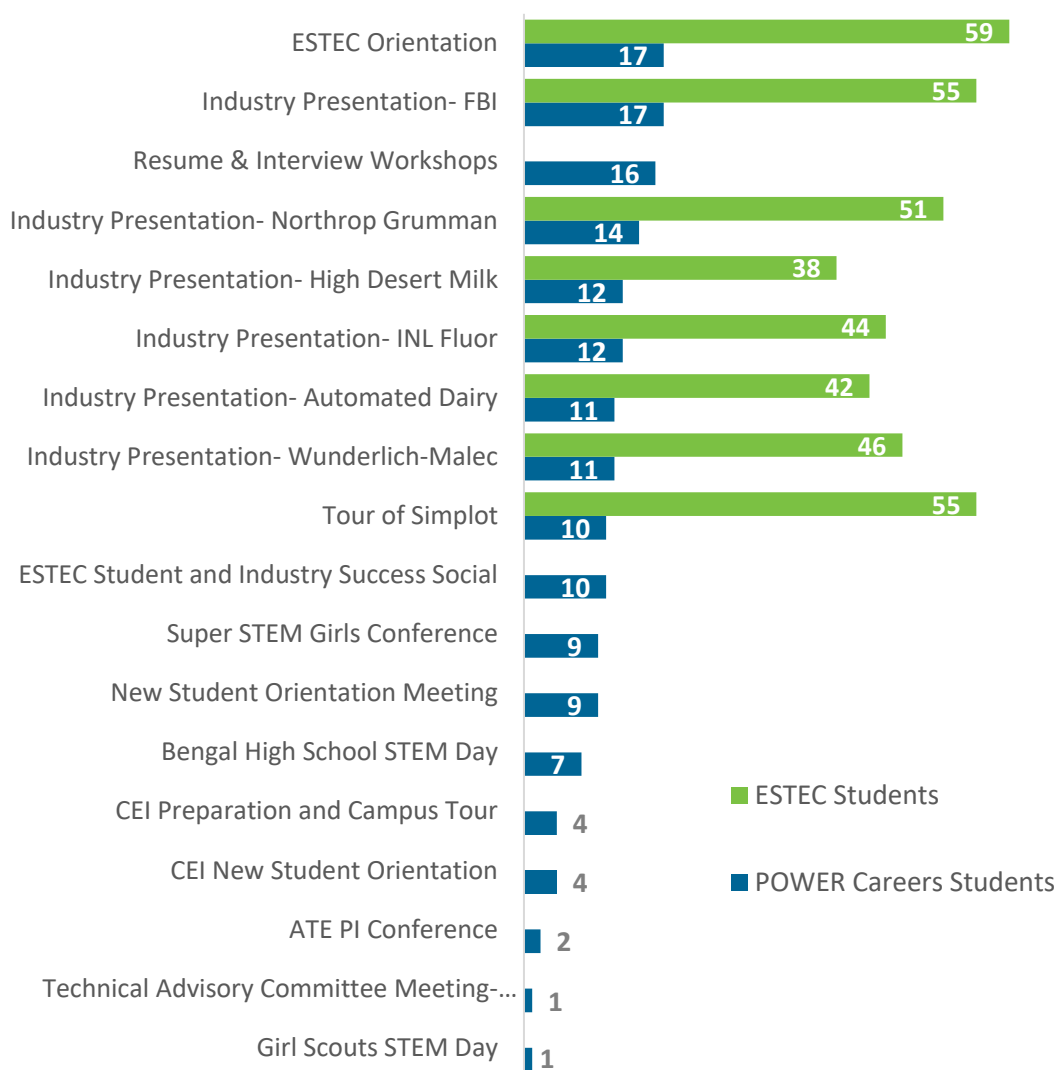
Third semester students talked about **Personal Effectiveness Preparation (PEP) classes** and how what they were learning there was helpful for them as they prepared to enter the workforce. They specifically cited the MBTI personality assessment as an eye-opening exercise.

Survey respondents and POWER Careers Staff also provided data on activities attended. Survey respondents were asked whether they participated in the 26 activities over the course of the Fall 2018 term. Since not all Power Careers students participated in the survey, attendance information was collected from Power Careers Staff. Records were supplemented with survey data where appropriate. When available, attendance information was provided for ESTEC students outside of POWER Careers as well.

The following chart shows attendance for professional development activities according to Power Careers’ records.



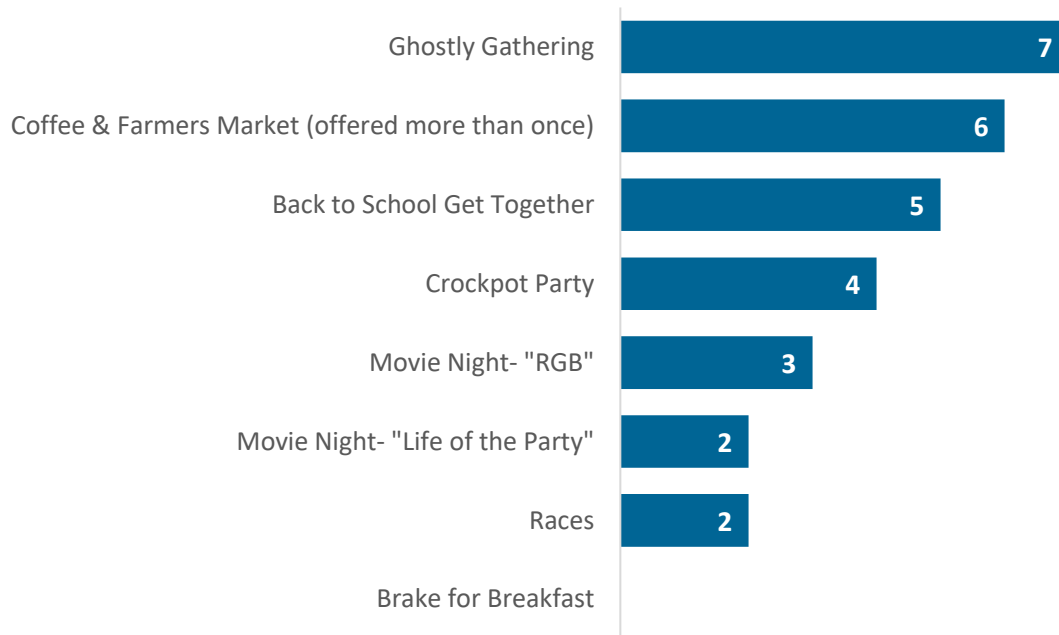
## Number of Students at Fall 2018 Professional Development Events



For CEI events, there are only 4 CEI students. And, for the ATE PI Conference, only 2 students were selected to attend.

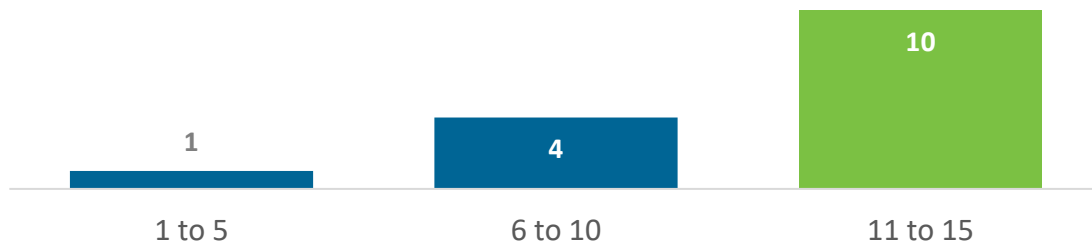


## POWER Careers Students' Attendance at Fall 2018 Social Events



Data was not provided for “Brake for Breakfast” and no survey respondents indicated attending as well. This event was supported by POWER Careers but not sponsored by POWER Careers.

**Most survey respondents individually attended over 11 events in Fall of 2018.**



Power Careers students were offered a variety of activities in Fall 2018, including those related to success in school, success in their fields, opportunities to expose high school women to STEM, and social events.

Most activities were attended by students, and no survey respondents stated that they did not attend any event, and 71% of survey respondents attended 11 to 15 events during the Fall 2018 semester.

Professional Development activities garnered the most attendance, with the ESTEC Orientation having the highest, followed by the resume and workshop event, and industry presentations. While social activities drew less attendance than professional development activities, students were provided with opportunities to connect with other female students in more relaxed settings.



### POWER Careers Plays a Key Role in Sponsoring ESTEC-wide Events

There is generally little distinction between POWER Careers and ESTEC activities. Events are open to all students, except for POWER Careers specific social events for women. For each event listed, POWER Careers played a role in its production. Information was provided related to the extent of the involvement by POWER Careers, including which events POWER Careers was the primary Sponsor for or which events it had a more supportive role.

Below is a breakdown of events including participation by POWER Careers students (according to records by staff or in some cases, the survey) in parentheses.

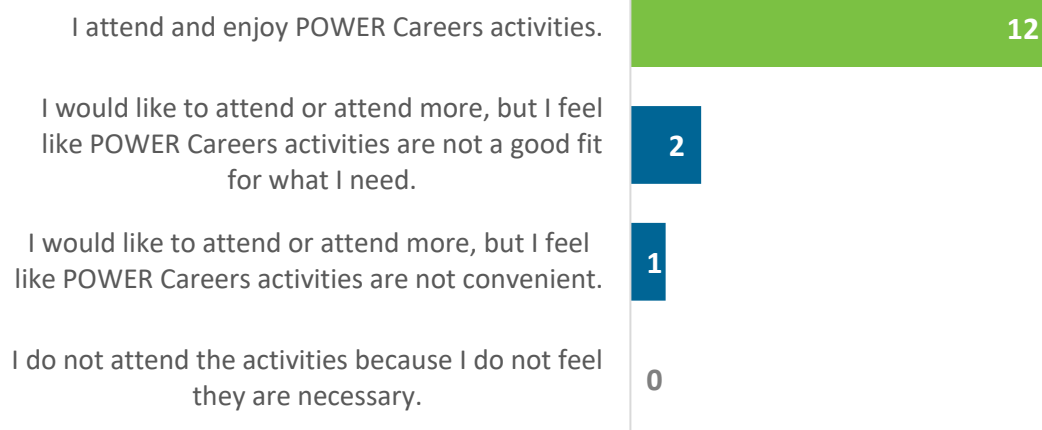
Sponsor	Supportive
Industry Presentation-Northrop Grumman (14)	Industry Presentation-High Desert Milk (12)
Industry Presentation-FBI (17)	Industry Presentation-INL Flour (11)
Resume and Interview Workshops (16)	ESTEC Orientation (17)
Coffee and Farmers Market (6)	Industry Presentation-Automated Dairy (11)
Back To School Get Together (5)	Industry Presentation- Wunderlich-Malec (11)
Movie Night "RBG" (3)	Tour of Simplot (10)
CEI Preparation and Campus Tour (4)	ESTEC Student and Industry Success Social (10)
Crock Pot Party (4)	New Student Orientation Meeting (9)
ATE PI Conference (2)	Super STEM Girl Conference (9)
Movie Night "Life of the Party" (2)	Bengal High School STEM Day (7)
Races (2)	Ghostly Gathering Community Event (7)
	CEI New Student Orientation (4)
	Technical Advisory Committee - Student Panel (1)
	Girl Scout STEM Day (1)
	Brake for Breakfast

Of the 26 activities offered, POWER Careers sponsored 11 and played a supportive role in 16. Activities sponsored by POWER Careers had similar attendance by type and included both professional development and social events.



### Activities Offered are a Good Fit

**Most (80%)** survey respondents **attend and enjoy** POWER Careers activities.



Open ended survey responses further exemplify students' thoughts about activities. Eleven (11) participants responded.

#### *Respondents discussed their availability to attend activities:*

Activities are varied enough that it is possible to make some work with my schedule, even if other activities don't.

I only missed very few of the events due to convenience.

A majority of the power career activities fit with my schedule and preferences. Saturday morning coffee dates are the best.

I am busy and don't have as much time as I would like for social events.

#### *Respondents mentioned that the activities are a good fit, fun, or helpful:*

It gives us so much information!

The POWER Careers activities are ones that the ladies decide on. This is why they pertain so much to us.

There is so much to do and it makes me a better student and member of my community to engage in so many opportunities.

There activities are fun and it makes me feel like I'm really important to them.

#### *Some respondents had barriers to participating:*

I liked participating in the activities that I did. Unfortunately, I didn't attend as many as I would have liked due to transportation issues.

I try to make it to most of the activities, but I have children and sometimes they have other things or I'm exhausted.

#### *One respondent lacked interest in the activities:*

A lot of the time I am not interested in the activities that they plan. I am not one to want to make friends though.



### Weekly Personal Effectiveness Preparation Meetings are Valued

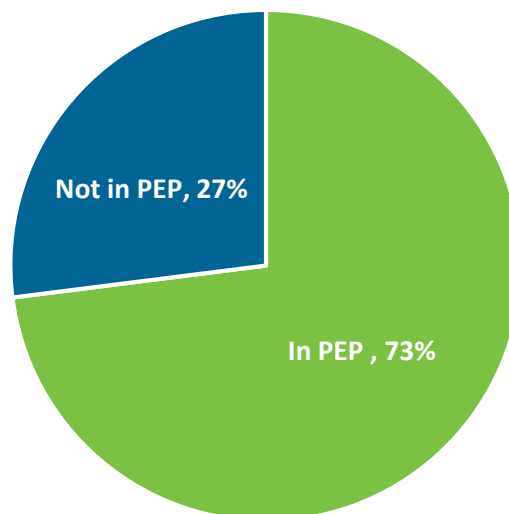
The Personal Effectiveness Preparation (PEP) meetings are weekly meetings open to POWER Careers students as well as Energy Scholar Students. Topics covered during Fall 2018 PEP meetings included:

Fall 2018 PEP Topics	
Adaptability	Developing Principles for Perfect Practice*
Managing Stress	Building on Strengths & Passions Character Analysis*
Mindset & Values	Building on Strengths & Passions Elevator Speech*
Setting Goals	Mock Interviews
Two-Way Communication*	Review of Interview Skills
Communication Preparation *	LinkedIn
Negotiation*	Achieving Excellence with Integrity
Developing Habits for Excellence*	

\* These topics come from the facilitator guide and student workbook Davidson, M., & Khmelkov, V. (2017). *Excellence with integrity employability essentials*. Manlius, NY: Institute for Excellence & Ethics.

PEP meetings are considered a core POWER Careers activity and attendance is required during one of students' semesters, usually their first. POWER Careers has conducted additional internal quality improvement activities on the PEP program.

**Most** survey respondents **participated in PEP** meetings this semester.



**Most PEP survey participants found the meetings "Extremely Useful." No participants selected "Not at all" or "Slightly useful."**

All 11 Respondents who Participated in PEP Answered this Question



Open ended survey responses further expound on the usefulness of PEP. Eight (8) participants responded with largely positive feedback:

*Provides support with the job search process:*

The preparedness set me up really well for my resume.

It has helped me be aware of questions that may be asked during an interview. This class helps us build our confidence and how we can improve.

It help me loosen up and willing to talk more. It also helped me build up my resume.

*Help with adjustment to college and tools for success:*

PEP was a good skill building class and I feel like my successes as an individual was important to the staff.

They helped me get used to college life.

I think these classes were a good chance to take a deep breath of air and be reminded of the simple things that can you successful.

Helped create opportunities for students and brought us together as a group

*Some aspects did not feel new:*

A lot of the things we learned in PEP were things I've been learning since middle school, so it was a bit repetitive, but it also gave me a new perspective on some aspects of things.

**Hurdles or Challenges Faced by POWER Careers Students**

In the focus groups, **finances were the top challenge** students reported facing in making their decision to enroll in ESTEC and participate in POWER Careers activities. Many also cited **family obligations**, including parenting, as obstacles they had to plan for. Other challenges included process hurdles, such as **enrolling late** or dealing with **transfer records** or **administrative holds**.

"I had to do a financial aid appeal...[Project Staff] helped me with every single step"

"I can't afford college all by myself so their scholarships that they offer us are helpful, extremely helpful for me because my income is wrapped up in paying for my child's needs."

"I'm a single mom so it's hard for me to be "like should I spend gas money to [POWER Careers event]?" It'd be nice but sometimes I'm like, I don't really have that right now."



A challenge brought up by the first semester women was the feeling that **the men in their classes had a higher level of basic awareness of tools and machinery** which made them feel they were taking too long with some lab assignments.

For instance, one student said an instructor was confused as to why they were stuck on a simple lab assignment, “I had to Google 90% of the tools in the toolbox to know what the heck they were for...It took [the guys] 10 minutes to go through the toolbox or less and we’re there for a half hour Googling.”

Or, from another student, “[some of the men] have been working with tools their whole lives...So the professor will say something, and all the guys will be like “yeah, yeah” and I’m like “I have no idea what you’re talking about.” I don’t even know what tool that is.”

First semester students were asked about how they were handling the first few months of the program. They all said the **coursework was challenging**, sometimes more challenging than anticipated. They both appreciated and were intimidated by how everything they were being taught builds on top of itself. As one student put it, “the good thing about this program is that it teaches you pretty much what you need to know, it’s implementing what you’re learning. Like my labs and stuff like that. It’s still really hard.”

### **Challenges Faced as a Woman in ESTEC and in the Industry**

When asked if survey respondents felt they faced challenges in the ESTEC program that their male counterparts did not, the responses were mixed. Ten (10) respondents provided the comments below.

#### *Easier to connect with women/feel isolated from men:*

It's much less intimidating to have other women to support me, especially not knowing anyone in this mostly male program.

During my semester, I believe that the men have had an easier time because nobody is avoided. However, a lot of the time the women are avoided when getting into groups/activities.

Isolation. Many of the men in my class study together or go get lunch together, etc. but I'm never asked to join. I look forward to my one class I have twice a week with other 3rd semester women. I sit by [female student] and we catch up and share our chocolate and vent if needed.

There are no girls in my program except for me so the men may think less of me because I am a women in a male dominated program. I feel like I have to prove myself to be relevant.

#### *Do not feel male counterparts experience less challenges:*

If anything, I think my male cohorts might have had more challenges than I did.

No, we were all pretty well matched!

Nope

I don't think I did. If anything, I think the men in my program struggled with more challenges than I did.

#### *Not having the same knowledge of tools:*

Identifying tools!

Some challenges that I had was that I didn't know how to use some tools that my male classmates knew how to use.

Common challenges staff saw female students have are outside **family obligations**, including parenting (and higher number of single moms versus single dads). There were a few observations that female





students tend to be older, and male students tend to be younger, and, therefore, don't have a lot of the outside responsibilities the older women bring with them. While finances are a challenge for all students, some staff acknowledge that they can be even more so for women with these family obligations. For example, the strain of a single mother going back to school or the impact on a two-parent household when one gives up their income to go back to school.

Academically, **students of all genders appear to come into the program with a similar level of base knowledge (or lack of knowledge)**. As one staff put it, “[students] all have deer in the headlights look when they first come in [to ESTEC].” However, **one (1) faculty member observed that the male student may have had more exposure to mechanics** than women. One staff also brought up that the mechanical program tract is the ESTEC program with the fewest number of women, although it is not clear why that is the case.

The key difference cited by staff is that the **women tend to be more willing to ask for help or advocate for themselves**. Some thought this may be because of the confidence boost they have received from POWER Careers or knowing that POWER Careers staff “have their back” makes it less scary for them to speak up.

“[Women in ESTEC] have more confidence. More willing to voice opinions. It’s the contact they get [in POWER Careers]”

“Any time you ask for volunteers, the women step up. Not sure the male students would do the same—more the “I’m paying to go here” mentality.”

“Women feel more comfortable asking for help. Willing to help each other or study together.”

“It may be encouraging to know that [Program staff] have their back.”

While staff felt there were many similarities among male and female students, a few staff members brought up some **tensions they have observed among male students at ESTEC**. One (1) administrator said that he has witnessed some jealousy among the men. He has seen this with both POWER Careers and the Energy Scholars— that some male students feel that they are not being offered the same resources and that it is resulting in some barriers to assimilation for the women. He thought that more education could be provided to these students so that they can better understand the resources available to all students and what POWER Careers does and does not do.

Program staff have also experienced this push back. One (1) shared how a group of male students once made the comment to 2 female students getting their photo taken, “oh it would be nice to be a female and get scholarships.” Unaware that those women were not scholarship recipients and that there were scholarship opportunities available to all ESTEC students regardless of gender.

In another story from a staff member, a woman who had been participating in POWER Careers events stopped, because her male peers insinuated it was because she needed extra help. “She said, “I don’t need help, I’m fine, I can do anything you can do.” So, she quit coming...and she actually became almost hostile.” Staff believe that with more awareness, these misunderstandings and conflicts could diminish.

### **Personal Growth since Beginning the Program**

First semester focus group students generally said that the most significant change for them since starting ESTEC was their **willingness to ask for help**. They talked about becoming comfortable asking their peers for help, as well as approaching instructors with questions. One (1) third semester student described a culture of comradery and support around helping each other out, “Even the guys in the program, they’re willing to stand up and help you out. And the instructors will help you out, the other



girls will help you out. You're not by yourself, like that's just the main thing is you're not on your own. Which is how I've felt the majority of my life." Part of the willingness to ask for help is in acknowledging you will make mistakes, and as one student said, "Our teachers even encourage the mistakes so that you can learn from them."

**Confidence** was the next most common change both first and third semester students saw in themselves. Confidence to not only stand up and ask for help, but also confidence in their intelligence and abilities.

"I feel like when I was not in school, I almost forgot that I'm really smart. So, coming back and doing this I'm like "wow, I understand this stuff, a lot of people don't understand it, like I am smart."

"I'm not as self-conscious, I can talk to more people and make friends."

"My confidence kind of went up a decent lot, just part of that is because I know that one of my instructors, he always calls on people who are being quiet and tries to get everyone involved."

Third semester students saw themselves **becoming role models for women in energy careers**, something they may not have considered at the beginning of the program. A few talked about how they have grown to understand the importance of being a woman in the classroom and in the field. As one put it, "I think it's important for a female to be in there...even if I only accomplish this in getting them to understand that it's ok for women to go into this, then I've done something to better that role for females."

Another student described her desire to be a **"champion for women"** in the field. She talked about misogyny she felt at her internship, "somebody made a joke and it was demeaning towards women...I didn't hurt my feelings but I know that...just because it doesn't hurt my feelings doesn't mean that it might not hurt somebody else's and make them not feel that inclusiveness...I really want to help to try to change those views...I want to say, "no, that's not OK."

### **POWER Careers' Support**

POWER Careers students cited Project Staff, faculty, alumni, and their fellow classmates as sources of support. Types of support ranged from academic to emotional support.

#### **POWER Careers' Support in Overcoming Challenges Faced in the Program**

**All survey respondents stated that POWER Careers helped them overcome challenges this semester.**

13 Respondents Answered this Question

Yes, 100%

Survey respondents were asked to describe what challenges POWER Careers helped them overcome. Thirteen (13) respondents provided examples of how the POWER Careers Project has helped them in the following ways.

*Providing, Linking to, or Asking for Support:*

The support given is amazing



POWER Careers helped overcome the challenge of not reaching out for help. With the rest of my college experience, I never really wanted to ask for help. However, they made me comfortable with asking questions.

It has helped me connect with a few students and staff. Knowing people care helps.

POWER Careers has helped give me the skills in order to make sure to be a part of my community and to learn how to work with others. This will be important in the work place, but has helped immensely dealing with male partners in my labs.

Jodi and Katie are always available and offer lots of moral and emotional support

Moral support

Yes. The staff was here for me whenever I needed and provided opportunities for us to succeed.

#### *Help with Adjustment to College:*

It was rather difficult to get used to being in college, and the power careers program was really helpful with that.

It helped me overcome my fear of speaking with others.

It really helped me get over how nervous I was about being in an unfamiliar situation. And the POWER Careers advocates were always a great resource when I needed help with this.

I was much more shy and I was able to loosen [sic] up a bit.

#### *Support with the job search process:*

Interview skills and building a technical resume

Yes, they helped me with my resume and thank you letter for a job I applied to. I didn't get it, but it was valuable practice! Then after I realized someone else in my class got hired, I was having a particularly hard day and left class to talk to Jodi. She encouraged me to not give up. I'm grateful Jodi and Katie are close, sometimes you just need a female who gets what we are going through. Being the only female in my program for my semester is a challenge some days.

For those survey respondents who faced challenges not faced by their male counterparts, they described if and how POWER Careers staffed aided them in these challenges. Three (3) of the 4 respondents stated that POWER Careers assisted them with these challenges.

POWER Careers has helped give me skills and courage to be able to talk with the men and make sure that I try and not let them intimidate me.

Yes, if it weren't for Power Career activities, I wouldn't know who the other women are because I really don't have any interaction with them at school during the day.

Yes. The women in the group provide support and without them it would be hard to go through my program that is male dominated

I was able to use google and YouTube. I didn't reach out to Power Careers for this one.

#### **POWER Careers Creates a Supportive Environment and Strong Personal Ties**

According to students in the focus groups, key strengths of POWER Careers include the **deep personal connections** project staff makes with the students and how **committed and knowledgeable staff** are. They're responses also included the openness of staff, faculty, and alumni to help students succeed which underscores the way in which **POWER Careers is seamlessly integrated within ESTEC.**



Many students who discussed key strengths, spoke in language that did not differentiate POWER Careers from ESTEC:

“At first I didn’t know that Power Careers was separate from ESTEC. I was just like they really support the girls...they work in conjunction with each other but they’re so seamless when they’re working with the other instructors and everything. And they all mesh so well that there’s no difficult transition at all.”

“I’ve moved around a lot...different semesters colleges in different places so I have a lot of transfer records. ...Of all of the places I’ve been, this is like a thousand times more like welcoming than any other school I’ve ever been to for any other program.”

“There are people willing to help, there are people who do care about you, you’re not by yourself. You have a group of ladies that want to help you, you have instructors, you have advisors, you have all these people who can help you.”

“Most of the women who have gone through the program are so willing to come back and be like ‘this is what you have to do.’”

When directly talking about POWER Careers, students cited the deep personal connections project staff make with students as a key element that makes them feel supported in the program:

“I had about 80 credits on lower campus...But, [POWER Careers Staff is] here to help us succeed, on lower campus they didn’t care if you passed or failed.”

“[POWER Careers Staff] stayed in touch over the summer. And it’s like I’m not even really a student yet and you’re this invested in me which is nice.”

“[Staff] know us individually.”

Other strengths mentioned by students in the focus groups include the project staff’s program-knowledge. There was an appreciation that staff know the ins and outs of ESTEC and can help students make informed decisions in their education planning. Project staff were also credited with their ability to keep students informed of the resources available to students and their efforts to bring the women together to foster community.

“I took speech online my first semester and I dropped it because I wasn’t going to pass. [POWER Careers Staff] was like “you need to take it this semester or you won’t be able to do it next semester because you’re going to be cramped up.” I’m like “oh, I wouldn’t know that,” just looking at it by myself.”

“They definitely stay on top of it on keeping us informed about what’s going on, changes, meetings, opportunities, scholarships, everything.”

“The community aspect of it...We have ties with all the other women here and then with our group that we’re in in our classes. So that has been one of the biggest pulls for me to be here and to stay here...just [POWER Careers Staff] doing the coffee meetings...That kind of stuff really does help change the view of how we go about [being here in the program].”

Survey respondents’ overall feelings towards their interactions with POWER Careers Staff was overwhelmingly positive and echoed some of the same elements mentioned in the focus groups. Twelve (12) respondents provided more detail.

*POWER Careers Staff are always available:*

The POWER Careers staff are always available anytime I need anything, even if it just to talk.



The power careers staff were always available to help whenever I needed it.

They were always very helpful and present whenever we needed/wanted any kind of help!

They are always there when I need them but they are not overly pushy.

[POWER Careers Staff] are always on campus and willing to stop and talk whenever you need them to.

The POWER Careers staff have helped to build a community in our programs and it has helped to make sure that everyone has the support they need. I had the opportunity to meet with them as often as I wanted and then helped to support my fellow women, which is why there is so much interaction.

A lot of my interaction was just casual, since they were so often around the classrooms where we needed them instead of in their offices a building away. Especially near the beginning of the semester, they were really good about talking to us and referring us to the various resources we needed to get used to this new environment of college.

*Staff provide helpful resources and are concerned with students' success:*

They are always making sure that if we're okay or doing well. They give us a lot of information of things that are going on and they are both such sweet and amazing people!

They are a good resource for anything we might need, and genuinely care about our welfare.

The staff cares a lot about each student and makes sure everyone is on the right track to success.

*Enjoy spending time with POWER Careers Staff:*

I loved spending time with them and got to spend time with most of the women

*Staff are usually available:*

I feel that I mostly have enough interaction with them, I know they are usually available when I have needed to ask them something or needed to speak with them. If they were not in their office I would email or text them.

ESTEC Staff agreed that POWER Careers provides a supportive environment for students and see the value in supporting and encouraging ESTEC's female students through POWER Careers.

A few instructors saw a need for specialized support for female students. One said, "Women don't think that they feel they have the ability or skills to step into STEM. No one has given them confidence."

POWER Careers provides these women "a support system," and project staff are skilled in "knowing the ins and outs [of the college] and how to get resources."

These responses were echoed by administrators and support staff. Common phrases that came up to describe what kind of support women at ESTEC needed, include:

"Have to have a role model. One-on-one support is key."

"Need skillset and knowledge, confidence, work ethic."

"[women] come in [to ESTEC] intimidated. They are pioneers on breaking bias."

"[even if they don't take advantage of services], there is comfort in knowing they aren't the only woman"

"Community building...Easy to give up if you don't have someone to share with."



“[Women] may feel completely capable of doing these things on their own...but when they know there are others like them [is powerful]. And, if they need help...they have somewhere to go and people to talk to.”

“This isn’t about providing help...this about a resource for everyone to be able to get any kind of resource they need or just to network.”

### Perceived Value of Interacting with Women and Experience as Women in ESTEC

**All respondents felt it was important to have the opportunity to interact with other women in ESTEC.**

14 Respondents Answered this Question

Important to  
Connect with  
Other Women,...

Survey respondents were next asked to reflect generally on their experience as a woman in ESTEC. Responses were personal, but largely felt that POWER Careers or interaction with other women in the program had positive impacts. Seven (7) respondents provided additional thoughts.

POWER careers does not put too much emphasis on gender. It is, in my opinion, a way to encourage more female participation in these programs knowing that there is support that feels comfortable and personal in what starts out as an uncomfortable, new situation.

They are all wonderful resources and support

I really like the activities and opportunities to meet and connect with other women.

I believe that if POWER Careers was not here, I would have had a much harder time going through this program and potentially failed. Instead, I have the skills and courage to go out and do whatever I want. There are a lot of males in this field, but I have seen that times are changing and I can be part of that change!

[Female student] helped me find a great outfit for my interview. I used a portion of my Power Careers scholarship for it. [Female student] also helped me practice my calibration in the lab. I do think this is a wonderful idea/ program as the numbers are so low for women in the program still. Sometimes men just don't get it! I am counting on the actual work environment to be better as there will hopefully not be as big of an age difference among coworkers and maturity levels.

The community of having these women is awesome. I love having someone there always

Power careers values the every women in their group and provides support whenever they need it. Without them I don't know how I would navigate through my program and get they opportunities to succeed.

### Areas for Improvement and Additional Support Desired

First semester focus group students desired more information to help prepare them for their courses and the transition to fulltime school. Their recommendations focused mainly on improvements to their courses, and included:



**Budget planning support.** There was a request for some guides to budget planning that was inclusive of school costs, estimated living expenses, and transportation related expenses that students could adapt to their individual needs.

**Material and book list before the start of class.** Some students mentioned that there were classes where on the first day they were giving a list of materials to buy, and that it would have been helpful to know that in advance. Advanced notice for books was also desired.

**Mixing up or assigning lab partners.** There was some discussion of having lab partners assigned based on students' base knowledge so that the students who may not have had previous exposure to certain tools or concepts would feel they could learn from their more experienced peers. They also felt being with the same lab partner all semester may limit their learning, "If I could at least get multiple viewpoints to be able to work with different partners that would definitely help."

Third semester focus group students spoke about additional things they would like to see out of POWER Careers and additional industry exposure as they prepare to graduate and enter industry. There was a consensus that POWER Careers already does a lot with the resources the program has, and that the **staff continuously ask the students for how they can better meet student needs.**

A **get together** or place for third semester students to reengage with each other was brought up.

"We were all together for the first two semesters and then we branched out to whatever we were doing. It would be nice that all the girls that we saw first and second semester plus the people who have come down [from Idaho Falls]. Everyone just re-get to know each other kind of thing, how are you doing, how's your program?"

There was also a desire to **meet more hiring managers** familiar with the technical roles the students are applying for. There was some frustration that HR managers at hiring events do not have a deep enough understanding of their companies' technical roles. For one student, "at the career fair, I would tell [the HR representatives] "oh I'm doing this." And they're like "oh, we don't need that." I'm like, "but do you have machines that run off this" and they're like "yeah." I'm like "I fix those machines." I don't think they realize how important our programs are."

Survey respondents were asked to provide suggestions on any other activities that they feel would be beneficial to POWER Careers/ESTEC students. Six (6) mostly varied comments were provided.

*More activities related to the job search process:*

I think being able to talk with industry and go on more tours would be helpful.

More workshops for resumes and professional networking.

*Varied suggestions:*

I really like the Saturday morning coffee dates.

I have ideas and have already given them to the ladies with plans to fulfill them! They are open to any idea and do not just brush them off.

The events I have seen done thus far have been pretty beneficial as far as I saw.

Umm, maybe something at the ISU craft shop? Or Lava Hot Springs hot pools. Maybe volunteer at an event or the animal shelter, assisted living or other.

Four (4) survey respondents gave parting comments on their thoughts about their interactions, activities offered, or other things they would like to see from POWER Careers Staff. All responses were varied, although positive.





I appreciate all the help [POWER Careers Staff] offer, even though I do not take full advantage of all of the things.

I really like those coffee dates haha.

I think they do a great job!

We need activities to continue!





## Promote a culture of mentorship to encourage women who pursue STEM technical careers

### Importance of Having and Being Role Models

**Knowing other women in the energy sector** was important for first and third semester focus group students. Mentors and role models mentioned included:

- Friends or family in energy careers or who are ESTEC graduates
- Alumni of ESTEC met at POWER Careers events
- They're peers (other women at ESTEC)

The third semester students talked about how **they were each other's role models**, and how important it was for them to be a role model to their families and communities. They also mentioned that the expectation that they would **give back to newer students** as mentors, tutors, and role models is messaged in their participation with POWER Careers.

"I see my peers as my role models. I see their struggles and how they're doing. I just feel like we're supporting each other so much."

"We work as a group, as each other's role models pretty much. It's not just one person doing all, it's everyone coming together and using their strengths to help others."

"I kind of went into it knowing...I would receive support and they were hoping I would give support back."

One (1) student mentioned a third semester women who is a role model in a non-ESTEC statistics class, "[we are] being mentors to just the ESTEC program, but they're doing it in classes that are required to graduate with people who aren't ESTEC."

In addition to being role models to each other, one student who is a parent talked about how important it is to her that she is a **role model to her kids**, "It's a good feeling to wake up in the morning and get yourself going and get your kids out the door and one of them turns and looks at you and says "you're doing a really good job, you're so smart, I'm so proud of you.""

When asked "Did you provide resources or support to other female students in the program? If so, please describe", 11 survey respondents described a variety of ways they supported their female peers.

#### *Helped classmates with tutoring or with assignments:*

I signed up to do tutoring to help my cohorts.

Yes, me and my classmate would help each other out with our assignments.

Yes, working with other girls in my classes

I tried to help by providing tutoring services whenever my peers had trouble, but that started with just helping one of my female classmates casually. Then [POWER Careers Staff Member] heard about it and encouraged me to do tutoring.

Yes, I helped one of the first semester girls before she dropped out. I also have studied a bit with [female students] for our Thermo class.

Tutoring, study groups



*Provided moral/ emotional support:*

Support, yes. Mostly emotional support.

Just let them know that they can come to me for anything and I am here to support them like they are to me

Moral support

*Other help:*

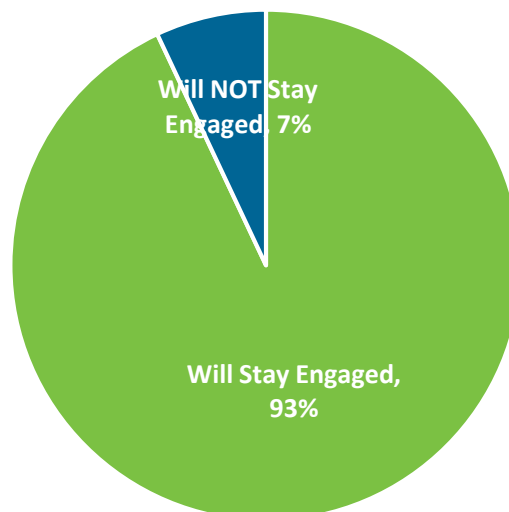
Yes, helped another female student find housing.

During this semester I checked in with a lot of the other women whenever able to and made sure to get in contact with advisers who can help my fellow women who are struggling.

**Continued Engagement Past Graduation**

Survey respondents were asked about their likelihood to stay engaged past graduation with POWER Careers. Past POWER Careers students currently attend events and/or stay connected to the program through participating as mentors or linking the program to their industry connections. POWER Careers staff try to stay in touch with alum and to also make opportunities available to them as well.

**All but one survey participant said that they think they will stay engaged with POWER Careers after graduation.**



Twelve students expounded on their response.

*Desire to help others:*

It was helpful to me, and I'd like to help others be able to do college easier.

I think I would like to tell other women coming into or going through or considering this program my experience.

I have seen how great being a mentor after graduation can be, and have benefited from the graduates wisdom. I would love to be a part of that!



It seems like a good program, and I'd be happy to help others in the manner that I have been helped through this semester.

*To continue to feel part of a group:*

The more I have involved myself in POWER Careers, the more I feel involved in the group as a whole and that makes the events even more enjoyable.

I want to grow with the women in the group and they have grown to be some good friends.

*To stay informed about job opportunities:*

They give us a lot of important information. They can also help me know about job opportunities.

I will stay connected because they do outreach to former students with job opportunities.

*General responses about wanting to stay engaged:*

Even in industry, I will be active in POWER careers

The details of information that have been given.

I would have not made it through my first semester without Power Careers!

*Response from the student who does not plan to stay engaged:*

I feel like majority of interaction is just for school time.



## Project Implementation and Sustainability

### Understanding of POWER Careers—its Mission and Purpose

Administrators and instructors were asked to describe the mission and purpose of POWER Careers in their own words. All interviewed spoke of the program as encouraging women to enter the energy sector and to support them through their time at ESTEC.

Instructors understood POWER Careers to offer counseling, mentoring, and scholarship support to female students. Administrators spoke of POWER Careers as a diversity and inclusion program aimed at increasing the enrollment of women in to ESTEC.

### The Value of Diversity at ESTEC and in Energy Careers

Bringing more women into ESTEC and the energy field was seen by all interviewed staff as a positive. The benefits of diversity cited by staff included:

**Diversity brings more perspectives to the table.** An increase in students of diverse backgrounds leads to better problem solving and new approaches to teamwork that benefit everyone in the program.

“[adding women to a team] adds a holistic view at overcoming obstacles.”

“Women think differently, have a different approach. They add perspectives in teamwork scenarios.”

“We see in troubleshooting that women and men who work together tend to more effective...Avoiding groupthink through diversity.”

**Diversity creates a more professional environment.** Instructors and staff talked about how more women in the program has changed the atmosphere of the college and the learning environment for the better.

“Women enhance the program...[they] uplift the professionalism and atmosphere”

“Curriculum hasn’t changed, but there has been an impact in the learning experience.”

“The language [in the classroom] has cleaned up. It’s good practice in working in a polite, professional capacity.”

“Faculty are more aware of how to interact with diverse students. More sensitive to how others exhibit [things like stress].”

“The camaraderie overall is increased...Staff appreciate the more professional environment.”

**Industry wants diversity and they like what they see at ESTEC.** Administrators and program staff underscored how what they are doing is valued by the companies they interact with.

“[when a partner visits], Industry partners notice and love the diversity in the room.”

“Industry wants diversity and ESTEC is meeting that need.”

“Businesses are stepping up and saying they need safe welcoming spaces.”

### Perceived Culture Shift at ESTEC

When asked whether there had been any tangible changes at ESTEC resulting from the implementation of POWER Careers, there were two distinct lines of thought.

The **first was that there were no substantive changes at ESTEC**, and what POWER Careers had done is change its external appearance (i.e. a “facelift”). The second, **more common answer was that there was**



**a change at ESTEC, and these changes are happening at a cultural level.** We heard from all levels of staff that the *culture* of ESTEC has changed.

From Administrators:

“Amazing transformation of who we are and what we stand for.”

“[We’re] changing the culture of the program...[staff have to] re-evaluate their biases and approaches.”

“Allowed a facelift. Redefine who we are and how we’re portrayed...changed our culture.”

“Has changed my internal outlook [about diversity].”

“Made more aware of micro-messaging...thinking through the department’s mission.”

From Project Staff:

“[Faculty are] paying attention I think a little bit more, and I would say for the most part I think all of them understand that there has been has a change and there will be a continuation of a change of the culture.”

“Walking down the hallway and looking in the classrooms and labs and seeing 2 or 3 women in each is *huge*.”

“Change among male students. If you only have one woman in a class, it doesn’t create an environment to change classroom dynamics. But when you get several women in the classroom, it broadens the perspective of the men.”

“[Sees] some subtleties, maybe some language use or behavior change [among staff and students at ESTEC].”

“Talked to another program coordinator [at the College of Technology]...He has only 1 female student in 6 semesters. He commented on how he sees and feels the difference at ESTEC [when he’s here].”

While some faculty said they are now more aware of gender differences and the importance of diversity, most said the way they teach has not changed since the start of POWER Careers. However, one (1) faculty member says that ESTEC’s focus on diversity has led him to integrate ideas around the value of diversity on teams, what professionalism looks like, and the importance of multi-disciplinary teams into his introductory course curriculum.

### Challenges Remain in Perceptions of Gender in Industry and in Society

The continuing **male dominance in energy system careers** was ever present in most of the interviews conducted. This was discussed in two contexts: the workplace culture at some companies and the micro-messaging society uses to tell women what kinds of jobs they are suited for.

Thoughts on industry’s relationship with gender norms:

“Still masculine...it’s not so much at the school any more but still very apparent in industry.”

“[When he was in industry] never worked with any women in technical role. There were women in the workplace, but not in technical positions.”

“[There still is] pervasive “Me Too movement” activity [in the workplace].”

“Some companies [still] have different cultures like “Navy nukes.” Companies have made great strides, however.”



“It’s a man’s world. Took a while, but things are changing...this work environment is what women fear.”

“[Women are] still going to be a minority in the field.”

“[it used to be] in order to accept a woman she had to change to be more man-like, swear a little, or get a little gruff so they would pay attention to her. But we don’t want that. We don’t want the women to feel like they have to change to fit in.”

In addition to the above quotes, 1 instructor expressed sadness that the workplace culture in industry had not become as inclusive as hoped over the last 30 plus years of their career.

Thought on micro-messaging and the challenge this presents:

“Women don’t know it’s a valid [career] option...Women are limited in what they think about. How do we get the whole population of children to think about all job options?”

“Need to be aware of micro-messaging...careful to highlight the positive. For example, don’t say “only girl [in the class].””

“[Challenge of the] micro-messaging that society or parents put on women.”

“Breaking the pre-conceived idea of the field. Making strides, but still a challenge. Culture is a hurdle. Like the idea that women can’t do math or science.”

“We are finding that we need to bring even more awareness to women are capable, and skilled, and knowledgeable in these areas.”

“[Female students] Feel that the men in the room know more than they do.”

Despite these challenges, staff commented on **the resiliency and tremendous growth they see in the female students** over the course of their studies:

“[We] are graduating more capable and more resilient students based on POWER Careers.”

“Well on our way to changing the lives of quite a few people...those out starting their careers. We’re changing lives.”

“They have swagger, confidence, and a strut in their step.”

“Lots of lives changed [for the better] with generational effects.”

“[Beyond the individual students, I see] benefits for families, for kids, for generations.”

“[It’s] huge to watch the transformation of students...Amazing to see the growth in maturity.”

### Surprises and Lessons learned

Project staff and administrators were asked whether the project unfolded as planned and if there were any large surprises or lessons learned. Most staff asked these questions said that, as with all new initiatives, **they expected there to be minor bumps** and issues along the way, but that **staff weathered those issues with ease**.

One major hurdle that came up among project staff was the **unexpected loss of the original project PI**. Project staff adapted well to this change and were grateful for the continuing advisement offered on a limited basis by the original PI. As one said, the project “went smoothly considering the issues.” There was some question, however of how much more POWER Careers could have accomplished if there had not been this loss in staffing. As one staff put it, “[If POWER Careers] had another half time person...or



something, it would have made some difference. This project deserved to have more people working on it.”

Lessons learned included:

The effectiveness of having a **program-based initiative** (as opposed to a larger initiative targeting all students in non-traditional fields, for example).

“There is a level of resiliency that occurs when you have a self-directed cohort. The resiliency is quite powerful, seems to arise from within. When a student talks another student out of quitting. “you didn’t let me quit, now I’m not gonna let you quit.” Very powerful and organic. Only happens when there is a focused commonality (e.g. women in ESTEC).”

“Very program specific...tied to those who know the program really well. We have that.”

“What we do [compared to] what other colleges do as far as non-traditional [student] recruitment and retention, they have a huge audience. We focus on a very small and specific group. By doing this we can see the needs and even anticipate them. We understand the program well...that’s what students need.”

“Cohorts need to be focused, small and intentional. Allow for space for organic community building.”

The importance of having **institutional buy-in** from staff and faculty.

“Exceptional faculty understand diversity. Didn’t have to fight the fights...It’s a retention culture, don’t want to lose any students. Partnership between support staff and faculty...Learned how if we were to expand this to other programs...I would look them in the eye and say faculty needs to buy in.”

“[Implementing the project was] pretty fluid...because ESTEC was already so well established. We were just doing the norm, but with more focus [on women versus all ESTEC students].”

“Institutional commitment. Not sure that’s a change. Anytime you look at allocating resources for a certain population. You need institutional agreement it is a good use of resources.”

The need to **dedicate more time to build both industry and mentor relationships**.

“Getting enough contact time with [industry is a challenge]. It’s not that they’re not willing to talk. It’s just us [small staff] having those conversations. Have not talked to as many industry folks as hoped.”

“Challenge was creating a larger and more diverse mentorship pool. Seemed to be driven primarily from the dearth of similarly situation women...Really relying on their small pool of graduates. Had hoped to find other women in the field. The ones they found were cautious and nervous about getting involved because they weren’t used to a hands-on experience like ESTEC...they could talk about the job, but not the program.”

“Wish had more time for relationship building. Industry doesn’t necessarily have funds set aside...Mentorship takes time.”

### Suggested Improvements

Faculty and staff were asked to make recommendations for areas POWER Careers could improve. Some faculty did not have specific recommendations beyond that they believed the project should continue beyond the NSF grant. A few staff offered concrete suggestions, including:



**More female representation.** Faculty and staff wondered if there were ways to bring on more female instructors or have more female speakers, such as incentives. They acknowledge hiring instructors is difficult across all genders since instructors take a pay cut by leaving the private sector.

**Improve engagement with graduates.** Staff said that more time could be dedicated to keeping track with graduates. “I had an expectation that we would have a lot more contact with past female graduates, and it hasn’t happened to the degree I thought.” Goals for this engagement would be to bring graduates back as speakers, employers, and mentors. There was a recognition that getting graduates on board as mentors takes considerable time. “Would have started out...with a different approach to building mentorship. Would have wanted...to build in interpersonal relationship time.” One administrator worried that asking recent graduates to give back as mentors may be too time consuming (a hard ask while these graduates are transitioning to the workforce).

**Developing deeper industry partnerships.** Administrative and project staff saw an importance on continuing to develop deep partnerships with industry and acknowledge that POWER Careers has helped move “passive” relationships to “active.” Some staff would like to seek out industry’s diversity and inclusion funding towards POWER Careers. One staff member talked about the power industry could have in recruiting more female students:

“When someone from the school tries to recruit a female student, what they’re doing is selling a program and for the student to enroll and write a check [to the university]. If an industry partner, instead, says we’ll pay you this amount of money [salary] to do this program...then they are buying. Sometimes the buying pitch is more convincing than the selling.”

### Thoughts on Sustainability and Expansion

All staff agree that POWER Careers has been a beneficial addition to ESTEC and the College of Technology more broadly. Four (4) themes emerged in conversations with staff. All agree the program should continue. Though, many felt that POWER Careers needed another year or two to establish itself before expanding it to other programs due to its “high touch” model. Others saw value in expansion, either with more outreach to K-12 aged young women or for replicating the program into other programs at the College of Technology.

**Changes made could be lost without sustained efforts.** Many staff interviewed felt that POWER Careers could use another year or two to get established and document lessons learned before attempting to replicate the high-touch model elsewhere. One (1) administrator noted that other programs at ISU had attempted similar diversity initiatives, but had not been as successful as POWER Careers, which he attributes to the high level of one-on-one support offered.

One of the other strengths of POWER Careers heard throughout staff and faculty interviews was the dedication of its two project staff and their strong program knowledge. This strength, however, was brought up as a potential sustainability concern. One staff’s greatest worry was that if there was turnover in POWER Careers staff, that the project would not continue at its current level of success. Because of this, they felt that in continuing the project efforts should be made to further engrain POWER Careers into the fabric of ESTEC operations.

“Progress that has been made could be lost. There is still places to get better. Not yet at the level they should be.”

“Women need to see other women...Can decline in a year or 2 without POWER Careers. Not a self-perpetuating process.”





“Takes a force to change someone’s trajectory...If [program doesn’t continue] afraid it [number of female students] will dwindle. Difference between now and before: we have repository of success that can be used to keep up momentum.”

“If we can maintain current staffing as now, sustainability is there. ESTEC has had a diversity vision for a while...If you try to transfer, that staff development may need larger lift.”

“High level of engagement of staff with students critical. If you took away [the Program Staff] things would drop off.”

“I’d want to see 1-2 years to show sustainability. Need to spend the time to establish [the program].”

“it’s a very needed project. Still not at 50% [women enrolled], still a lot of room for growth. Moving in the right direction.”

“I would like to see that it has been incorporated enough in ESTEC that we can all kind of just keep going...I think we need a couple more years to have that consistency for it to carry on its own. It’s that high touch.”

“Momentum is huge in marketing and recruitment. Takes time. Maybe 5 years it would be self-sustaining.”

**Include more outreach to younger generations with K-12 work.** A few felt it was necessary to expose younger women to energy careers and wondered if POWER Careers could incorporate K-12 outreach in its work.

“I see a role for K-12 programming, a K12 STEM Coordinator & summer programs”

“Outreach to younger women in high school. Expose them to more options [earlier in their lives].”

**Expansion opportunities within the College of Technology.** The next logical step for many is to expand POWER Careers from ESTEC to the wider College of Technology, in order to provide women in those nontraditional education tracts a similar level of support.

“Robotics targeted as ideal program to establish a POWER Careers model.”

“See the value of the project. Looking to continue and expand.”

“[Some] want to broaden scope to other programs within the college. My ideal would be to get established here before moving to college-wide”

“I would like to see continue [first], but then I would like to see it expand and go to all of the programs with nontraditional students in there. Because those micro-messages are all out there everywhere”

**Tap industry for increased funding.** In addition to utilizing institution (i.e. Perkins) and grant funding, some administrators and program staff suggested looking to industry for financial support of the POWER Careers program.

“Many [companies] have diversity goals and we can work with them for a funding commitment. Its corporate ROI.”

“[Potential] funding from INL. They are hiring lots of graduates, very interested in female grads.”

“External funding...talked about the idea of directing current dollars from the National Lab and other private dollars”



## Summary of Findings and Recommendations

Interviews of staff and focus groups with students found an overwhelmingly positive reception to POWER Careers. The value of the program appears to be in its ability to build a strong and supportive community within the female students at ESTEC—and is an outgrowth of an already supportive community of ESTEC staff and faculty. More specifically, POWER Career’s high touch method which involves a variety of events, regular communication, and personalized follow up appear to be highly valued by the students and staff.

In focus groups, first semester students were still adjusting to the rigor of the program and were more likely to talk about academic challenges as opposed to challenges faced in the program based on their gender or other characteristics. Third semester students talked about how they have come to see themselves as role models and the importance of seeing other women in the program and industry.

The wide variety of staff interviewed agreed that POWER Careers has made a positive impact on ESTEC, both in creating a more diverse and inclusive culture and in improving performance outcomes around enrollment and retention. Credit appears to be given to the dedicated program staff and the student-centered approach of the instructors at ESTEC. Challenges remain in how society and industry still believe the sector to be male dominated. Dedicating time to build quality relationships with industry and alumni, as well as seeking out additional funding sources were the largest lessons learned during the project’s lifetime. All interviewed would like to see the program continue, although some would like to see it remain at ESTEC for a brief period before expanding into other programs.

### Recommendations

The following recommendations were identified by the evaluator. Recommendations are arranged by the goal or area of interest they are supporting.

#### Retain Students to Graduation with a Supportive Student Learning Community and Place Graduates into Professional Jobs

- Industry-focused events garnered the most attendance among activities and were spoken about the most positively by students. Expand opportunities for women to connect to industry through speakers, networking, presentations, conferences, tours, and other events.
- Women would like a chance to connect with industry professionals that can better speak to the technical positions they hire for. Students mentioned HR professional sometimes lacked necessary context or could not answer specific questions.
- Students requested more support with budgeting. Specifically, this included assistance before enrolling related to costs, as well as knowing what books are needed before the first day of class. POWER Careers staff could provide prospective students with a typical budget in advance of starting classes, which could include the average costs of books.
- Barriers to attending activities, such as transportation and childcare were noted. Coordinating rides or scheduling one or two activities that allow students to bring children may increase participation.
- Isolation from men was a concern that arose among female students. Staff interviewees also acknowledged that some male students struggle with what they perceive as unfair support that female students receive. As part of new student orientation, provide a session on tolerance, where incorrect assumptions can be addressed at the outset. Teach faculty and staff how to appropriately call out and handle issues that may arise in class or labs or in other common



spaces on campus. A one-time session will not be enough to undo long-held assumptions about women, but it can set the pace for what is and is not tolerated at ISU. Reach out to ISU's Student Involvement Office to find organizations or materials that can provide assistance on appropriate content for these sessions.

- In addition to male students, faculty were also more likely to assume POWER Careers had a scholarship component. For both faculty, students, and staff, an opportunity (perhaps included in orientation depending on participation) is needed to clarify what the program is and is not.
- Not having the same knowledge of tools was a concern across data collection activities. Providing students a voluntary orientation or workshop of the tools and/or machines used in class, in advance of starting their first semester, may quell these concerns. The workshop should be provided to all students to prevent stereotyping or adding to incorrect perceptions.

### Promote a Culture of Mentorship to Encourage Women Who Pursue STEM Technical Careers

- Students acknowledged a desire to stay engaged with POWER Careers past graduation. Capitalizing on their current interest may serve future outreach well if students are primed with what to expect and what the need is around.
- The struggle to identify enough female mentors was noted as was less connection with graduates than expected. Using technology, such as video conferencing technology would allow POWER Careers to connect more women to female industry contacts outside of those who are local. For mentoring, this option may be more intimate than phone calls or emails. To keep more women engaged, perhaps survey alums about challenges to continued engagement or opportunities that would increase their interest (i.e. trainings or specific events).

### Project Implementation and Sustainability

- Interviewees acknowledged that workplace culture still lacked inclusivity. Expanding opportunities to reach out to local industry and create awareness about women in energy careers may help ease the transition for students at least locally. Preparing students by providing instruction during the program about their rights and handling workplace harassment may be of assistance as well. Or, bringing in women in industry to specifically speak to how they have navigated these issues.
- A need for deeper industry partnerships was elevated by interviewees. Deeper industry partnerships could assist with addressing potential workplace challenges graduates may encounter, developing a pipeline for placements, and providing students with the industry connection and concentrated professional development they have requested. It was also acknowledged that since the Project is doing industry a favor in providing them with diverse recruits, that industry may be a source of revenue for the Project going forward. Resources on cultivating industry partnerships that could be used to facilitate deepening existing connections.
- As thoughts on expansion are raised, it is important to start documenting the specifics of the work carried out over the past three years so that replication can capture the most important aspects of the Project. Interviewees also acknowledged that there were concerns around what would happen if one of the two core staff leave as it might have an impact on the project's success. Succession planning activities could assist in both of these areas.



- There is an opportunity for POWER Careers students to conduct community service with K-12 girls to bridge the suggestions for increased community service activities and for POWER Careers do outreach to get younger women engaged earlier in their education. Women in the program noted the importance of helping other women and of being a role model. Reaching out to local schools to see if POWER Careers could hold an event or an afterschool project to show young women about their work will provide women opportunities to give back and be role models while also helping to dispel myths that women are not in these roles to school-aged girls.



## Appendix A: Logic Model

