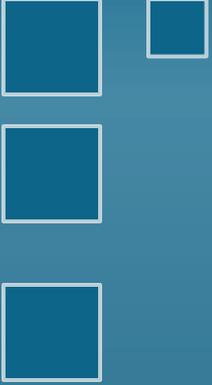


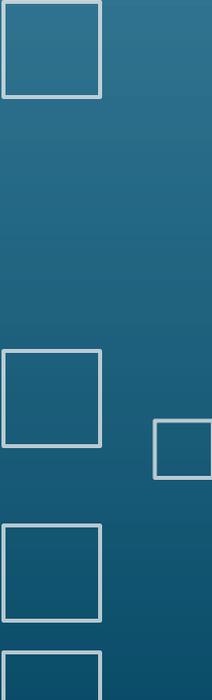
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2018 Industry Survey

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“Should BS-ET Grads be Eligible for Professional Licensure”

Salt Lake City - June 2018

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Ron Land
ETNF Chair



Background on the Survey

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- Target Audience - “Practicing” Engineering Mgrs. Who Have Experience Observing and Managing BS-ET Graduates in Engineering Positions
 - Outreach Via:
 - ETC Member Requests to Program IAC Members
 - Blanket Call Via ETD-listserv
 - Four Requests Over 3 Month Period
 - Three Simple Questions



Survey Introduction

“As the lead or managing engineer in your organization you have been invited by the Engineering Technology National Forum to participate in this survey. The survey is short consisting of only 3 questions, and your participation in the study is completely voluntary. However your thoughts are very important to us. Your survey responses will be strictly confidential and data from this research will be reported only in the aggregate. Specific information about you the respondent will remain strictly confidential. Thank you very much for your time and support”



Question #1

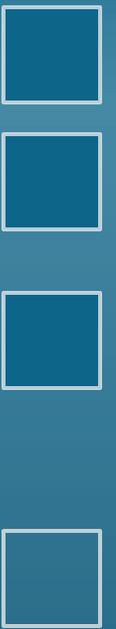


In your position have you had the opportunity to observe and assess the capabilities of engineers in your organization whose college degree was from an ABET-accredited bachelor of science degree program in Engineering Technology? If your answer is No please skip the next question.

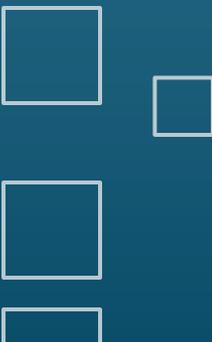




Question #2



Based on your experiences with these graduates from B.S. ET programs, do you see any reason that they should be prohibited from becoming licensed professional engineers via the FE and PE exams and following the standard licensing process? After answering this question please skip the next question.





Question #3



Though you have not had first-hand experience observing and working with engineers whose degree is a BS-ET degree, do you have reasons that you feel should prohibit these engineers from pursuing professional licensure? If so could you summarize those reasons below?





Optional Information Requests

- 
- Company Name
 - Respondents Company Title
 - Number of Employees
 - Annual Revenues
- 
- 
- 
- 

Response Results:

VIEWED
651

STARTED
328

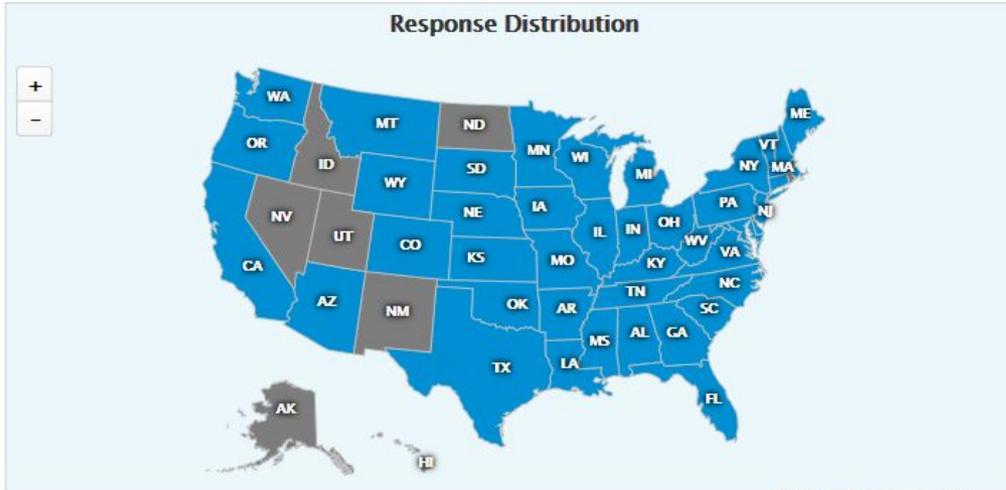
COMPLETED
207

COMPLETION RATE
63.11%

DROP OUTS
121

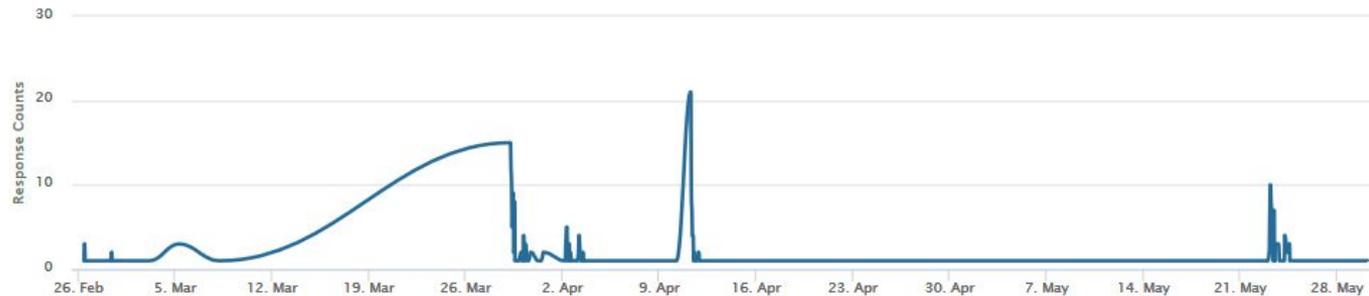
TIME TO COMPLETE
2 mins

Response Distribution



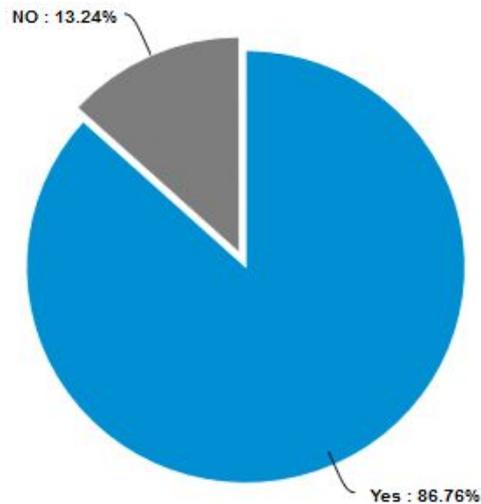
States	Responses
VA	9.45%
PA	8.23%
IN	7.93%
OH	6.10%
NY	5.79%
MI	5.18%
TX	4.88%
KY	4.57%
TN	4.27%

Response Count Time Line



Question #1 Results:

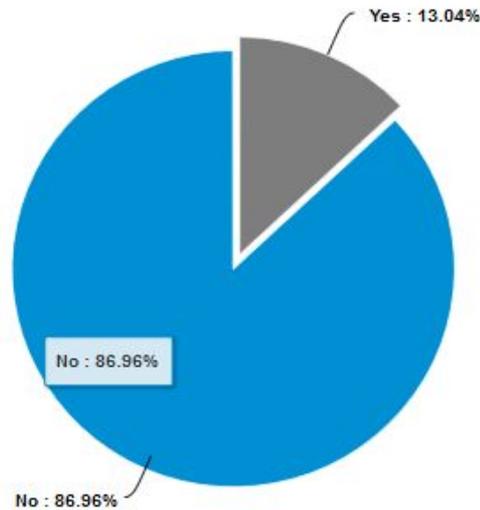
3. In your position have you had the opportunity to observe and assess the capabilities of engineers in your organization whose college degree was from an ABET-accredited bachelor of science degree program in Engineering Technology? If your answer is 'No' please skip the next question.



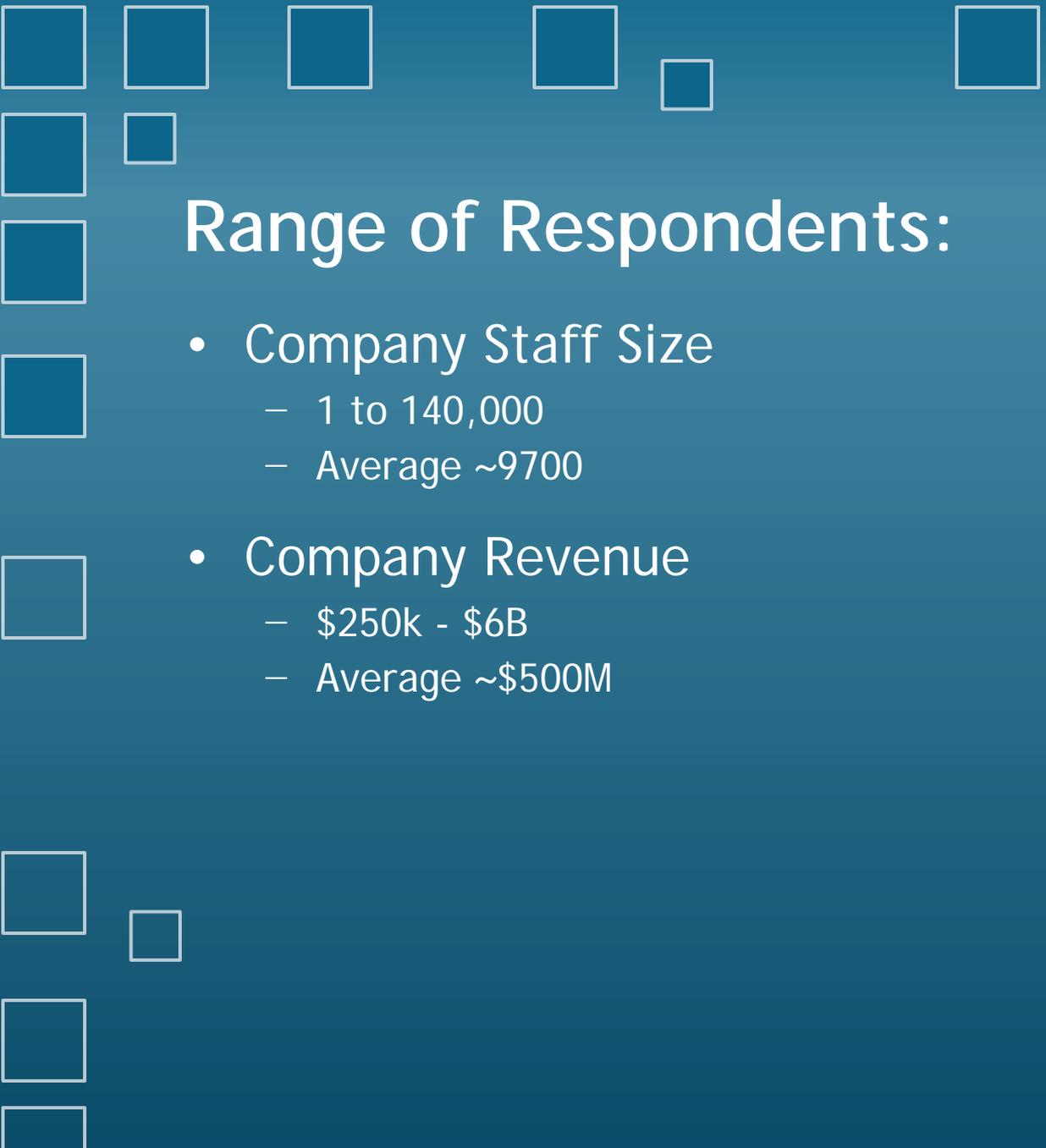
Answer	Count	Percent	20%	40%	60%	80%	100%
Yes	177	86.76%	[Progress bar]				
NO	27	13.24%	[Progress bar]				
Total	204	100 %					
Mean: 1.132	Variance: 0.115	Standard Deviation: 0.340	Standard Error: 0.024	Confidence Interval: [1.086 - 1.179]			

Question #2 Results:

4. Based on your experiences with these graduates from B.S. ET programs, do you see any reason that they should be prohibited from becoming licensed professional engineers via the FE and PE exams and following the standard licensing process? After answering this question, please skip the next question.



Answer	Count	Percent	20%	40%	60%	80%	100%
Yes	24	13.04%					
No	160	86.96%					
Total	184	100 %					
Mean: 1.870	Variance: 0.114	Standard Deviation: 0.338	Standard Error: 0.025		Confidence Interval: [1.821 - 1.918]		



Range of Respondents:

- Company Staff Size
 - 1 to 140,000
 - Average ~9700
- Company Revenue
 - \$250k - \$6B
 - Average ~\$500M

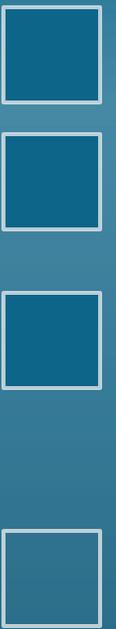


Sampling of Titles:

- Director of Engineering
- Product Manager
- Consulting Engineer
- Design Engineer
- Process Manager
- Senior Facilities Engineer
- Senior Manager, Applications Engineering
- Materials Testing Department Manager
- Executive Director, Engineering
- New Projects, Engineering Specialist
- President/CEO



Comments From Those Who Answered 'No' to Q1:



- Positive Comments:

- As a member of the MET Industrial Advisory Committee, I have an opportunity to review senior design projects on an annual basis. Based on the fundamental engineering principles covered, the MET students should receive consideration for pursuing licensure.
 - Since graduating from 'xxx' with a BSEET degree, earning a Masters Degree from 'yyy' and becoming licensed in Pennsylvania, I see no reason why BSEET graduates should not pursue a PE license.
 - I do not have reasons that should prohibit these engineers from pursuing professional licensure.
 - No objections
 - I think they should be allowed to apply and become licensed. The rigor of the licensing should be sufficient to vet any performance concerns.
 - No - let them go for it.
 - No, as professional licensure is what is expected from the field albeit if only an unspoken rule. Why would anyone want to prohibit the attainment of such a credential (would be the best question here).
 - I see no reason that would limit BS-ET degreed engineers.
 - None at all.
- 



Comments From Those Who Answered 'No' to Q1:

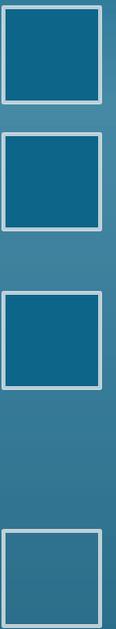


- Negative Comments:

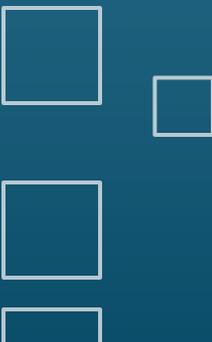
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- Uncertain if they have the theory background to understand the engineering concepts required of a Professional Engineer.
 - Engineering technology BS have their place as a recognized professional program, but becoming a professional engineer requires strict adherence to a curriculum full of heavy math and science which technology degree does not require.
 - I don't even know what an ET degree is. I likely would not hire someone with that degree as it does not sound very impressive.
 - I believe an EE degree offers more of the why/theory than an ET degree which is needed as a PE.
 - I don't think that the curriculum at some of these institutions meet the criteria that have been set by the Board and ABET for receiving a license (?).
 - The level of rigor is not the same as a full fledged engineering degree. It starts to muddy the water.
 - They are hands-on applied working environment guys. No need to design engineering structures or materials as they require high level of math and physics background, which often these folks do not have. They should rather go for CMS, CTM, CTP, Six-Sigma etc. certifications.



Comments From Those Who Answered 'No' to Q1:



- *Negative Comments:*

- I answered 'No' as my experience with individuals having a BS-ET degree is not current; those in our organization with ET degrees are fine people, though generally not as well grounded in engineering fundamentals; they are more the 'doers' rather than the 'thinkers.' They typically would not be people I would consider good candidates for PE licensure. A lot of it is about academic rigor and depth of study. The ET degree is typically a wide sampling of practical applications of pre-designed engineered systems; the EE degree is more about theory and concepts. The EE degree is more challenging and those coming out of that program have a better grasp of 'why' vs. 'how.' Most jurisdictions require a PE license for those involved in work that could affect the public - it is largely about safety. If you don't have the underlying understanding of 'why' you are less likely to be able to make good decisions (engineering decisions) based on a fundamental understanding of the physics, chemistry, etc. of the design.
- 



Comments From Those Who Answered 'Yes' to Q1 and 'Yes' to Q2 (most failed to provide comments explaining why they answered this way):



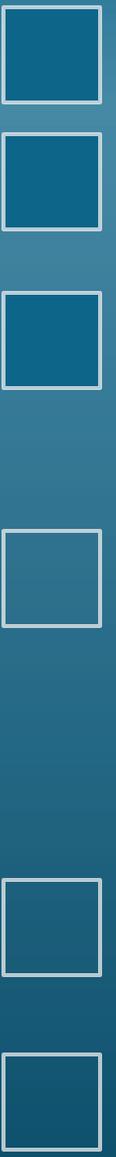
- Negative Comments:

- ETs do not get the same design education or work experience as the typical engineer. I have worked with several ET graduates who did not do superlative work in an engineering environment. Their reduced math backgrounds prohibited them from applying pertinent principles in energy management and in design.
 - The Engineering Technology graduates should not be combined with the Engineering graduates. There is a world of difference between the two types in preparation, skill level, conceptual ability and the ability for analysis and integration. They can have a separate registration as Professional Engineering Technologists.
 - My experience with BS-EE, BS-ME and BS_ET and BS_MT has created a view of different skill sets. The foundation of engineering supports the professional licensure. In my experience the Technology programs lend themselves more to applications based of developed technology.
- 



Comments From Those Who Answered 'Yes' to Q1 and 'No' to Q2 and Also Offered Comments:

- Positive Comments:

- If anything, create a specialized Professional Engineering Technologist exam.
 - I personally do not see any reasons why BSET graduates should be denied the opportunity to set down for licensing examinations FE and PE. Students will have to pass the exam no matter what. It's not like you are giving a free pass.
 - No, on the contrary, I have worked with PEs that have no ability to function in the real world. Smart people but once they leave the conceptual world they can't understand why unconsidered external factors affect a process.
 - If the FE and PE examinations are valid instruments for evaluating engineering education, base passing and failure on those examinations. If they are NOT valid, use other criteria.
 - As long as the Engineer honestly/truthfully fulfills their time and experience in addition to preparing to pass the same exams, in my opinion there would be no reason they should be denied the opportunity to take the exam.
 - If they can pass the exam, there is no reason to hold them back.
 - ASCE has an Initiative called raise the BAR. It promotes 30 plus credits after a BS for a license. We should raise the BAR but not bar the door to ETAC graduates
- 



Key Result (in my view)

- 87% of Engineering Managers with Experience Observing and Managing BS-ET Graduates Believe BS-ET Should be Allowed to Become Licensed Through the Normal Licensing Process.
 - This is True Across the Full Range of Engineering Companies, Large, Small or In-between, and Regardless of Discipline.
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Comments/Questions:

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