



## **AB 60 Engineer Title Protection Bill**

Testimony of Senator Steve Nass

Assembly Committee on State Affairs

March 1, 2017 • 225 Northwest, State Capitol

Thank you Chairman Swearingen for holding a public hearing and allowing me to provide written testimony in support of Assembly Bill 60. This legislation will prevent someone from using the title “engineer” when they do not possess the necessary credentials or education to identify as such.

Under AB 60, the title of an employee in the state classified service may not include the word “engineer” unless the individual:

1. Is a registered professional engineer with the State Examining Board of Architects, Landscape Architects, Professional Engineers, Designers, and Professional Land Surveyors; or
2. Possesses at least a Bachelor of Science degree in engineering or a degree in mathematics that is higher than a bachelor’s degree.

The bill also requires each appointing authority in the state civil service to prohibit their employees from representing themselves to the public as engineers unless the employee satisfies the criteria described above.

I have observed, and have also heard from colleagues, times at local meetings where a state agency employee identified themselves as an engineer only to find out that they did not have a degree or certifications. Other times individuals have the term “engineer” in their titles, however the title is not an official professionally recognized credential.

While the intention in these and similar cases is not to deceive, it does cause confusion for local officials and members of the public who may rely on a technical opinion or information provided by the individual thinking he or she have an expertise or credential that in reality they do not possess. Eliminating the over-broad use of the term engineer in titles will be more precise and reduce the possibility of confusion for the public

Thank you again for the opportunity to provide testimony in support of AB 60. If any committee members have further questions, please feel free to contact my office to discuss this legislation in greater detail.

*“In God We Trust”*

11th Senate District

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**SPEAKING IN SUPPORT OF  
2017 ASSEMBLY BILL 60**

Personal Background:

Name: Donal Knorr  
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Education: BSEE University of Wisconsin, 1975

During my 40-year career I was employed as a consulting engineer for three engineering consulting firms, all headquartered here in Madison, Wisconsin. During that time, I performed engineering services for over 100 clients and was registered as a Professional Engineer in 10 states, including Wisconsin.

I was also the President of the Indiana Society of Professional Engineers for three years, 2010 – 2013.

**Statement:**

When using the title or term of "engineer" by a person in public or while representing an organization, there is an inherent understood level of expertise when viewed by the public that comes with this title. I feel this title should be only used by individuals that can demonstrate through education or state registration that they qualify and have the expertise to call themselves an engineer. To represent oneself as an "engineer" through job title or personal designation, without the education or expertise (as represented through State registration) deceives the public and may give the public a false sense of perceived expertise.



Donal P. Knorr

## Wisconsin Assembly Hearing on AB 60

### Testimony of Richard A. Eberhardt, P.E., P.L.S.

March 1, 2017

My name is Richard Eberhardt. I live at 2347 Hansen Avenue, City of Racine in Racine County.

I am dual registered in the State of Wisconsin as both a Professional Engineer (P.E.) and a Professional Land Surveyor (P.L.S.). As a consulting engineer to many municipalities and as a member of the State Board for the Wisconsin Society of Land Surveyors, I have been involved in job titling issues.

I support Assembly Bill 60 as an effort to reduce confusion among the public and state employees by requiring that titling be consistent with the role and capability of "engineers".

It has been my experience that the terms "engineer" and "engineering" have been misused in education and job titling.

There are a couple of reasons for this. The first is the general nature of the terms and their misuse in titling non-engineering positions such as giving the title of "engineer" to a mechanic in a school, a technician in a manufacturing plant, or a construction equipment operator.

The second reason for confusion and misrepresentation is because Wisconsin has exemptions for requiring registration as a P.E. for engineers working in manufacturing, utilities and government. These exemptions lead to more misunderstanding of the title of "engineer".

All of these sources of misrepresentation within classified jobs are addressed by AB 60. Government employees often interact directly with the public and engineers in the private sector. It is important that everyone understand the kind of expertise of the people who they are dealing with. This bill will enhance credibility of our government agencies.

One part of this proposed bill that should be revised is the provision that allows a person with a higher than a B.S. degree in mathematics to be titled as an engineer. This request is very important.

Engineers obviously use math but math courses are only about 15% of the credits required to obtain a B.S. degree in engineering. A graduate with even a doctorate in math is not prepared to do engineering work. With removal of the reference to a mathematics degree, AB 60 is a good step in clearly defining engineers to the public.

Thank you for your attention and consideration.

Richard A. Eberhardt P.E., P.L.S.

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## Wisconsin Assembly Hearing on AB 60

### Testimony of Glen R. Schwalbach, P.E.

March 1, 2017

My name is Glen Schwalbach. I reside at 1090 Moonriver Drive in the Town of Rockland in Brown County. I am a Professional Engineer (P.E.) registered in the State of Wisconsin for over forty years. As an executive in charge of engineers, I was very involved in job titling issues.

I support Assembly Bill 60, in part, as a step forward for reducing misunderstanding among the public as to the role and capability of individuals who are representing themselves as "engineers" at least in state government jobs. I'll address the part with which I disagree later.

The terms "engineer" and "engineering" have been misused and, thus, created confusion for many decades especially in education and job titling because they are not only have specific meanings in the regulation and practice of the engineering profession but also are used generically.

In the early 1900's, after some fatal accidents caused by failing structures, states began requiring that engineers who design structures must demonstrate that they are capable of doing so without endangering public health and safety. Today, all fifty states have requirements for engineers who offer engineering services involving public safety to be registered or licensed as Professional Engineers by satisfying what is called the "three-legged stool" of engineering education, examinations and experience".

Registration and licensure laws have made a big difference in protecting public health and safety. Yet, confusion and misuse of the title are as prevalent as ever. There are three reasons for this. The first is the broad nature of the terms and their misuse in titling of non-engineering positions such as the "boiler engineer" in a school district, the mechanic in a manufacturing plant, or a crane operator.

The second reason is the misunderstanding of differences between engineering technology and engineering in education and practice. This misunderstanding not only occurs among the public which includes students and parents but also among educators, employers and, I've found, legislators. Anyone involved in legislation for STEM education, credentialing, or titling should have knowledge of the differences. A brief explanation comes from ABET which accredits engineering technology and engineering programs. They explain that a 2-year associate degree in engineering technology prepares an engineering technician, a 4-year B.S. degree in engineering technology prepares an engineering technologist, and a 4-year B.S. degree in engineering prepares an engineer. ABET uses very different outcome criteria when accrediting engineering technology programs and engineering programs.

The third reason that there is confusion and misrepresentation is that Wisconsin has exemptions for requiring registration as a P.E. for engineers working in manufacturing, utilities and government. These exemptions lead to more misapplications of the title of "engineer".

All three of these sources of misrepresentation within government classified jobs are addressed by AB 60. This is the place to add clarity. Government should be a leader for transparency and "truth in job titling".

The part of the bill that should be revised is the provision that allows a person with a higher than a B.S. degree in mathematics to be titled as an engineer. This is a significant issue.

Math is only one of the tools used by engineers but more important in the education of an engineer are the science and engineering courses. Math courses are only about 15% of the 127 or so credits that a B.S. degree in engineering requires. About 74% of the curriculum are sciences and specific engineering courses. The remaining courses are humanities, communication, non-engineering electives, etc. A graduate with even a doctorate in math is not prepared to practice engineering

Also, it would be appropriate for the bill's language to specify that the B.S. engineering degree be one that is ABET-accredited.

In addition, preferably, only a registered P.E. would be allowed to have the title of "Engineer". But, if that is not possible at this time, then this proposal is still a significant improvement for public safety.

With removal of the reference to a mathematics degree, AB 60 corrects a long-time problem.

Thank you for your attention and consideration.

Glen R. Schwalbach, P.E.

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# Engineering vs. Engineering Technology

## How are they different?

Engineering and engineering technology are separate but closely related professional areas. Here are some of the ways they differ:

### Curricular Focus

Engineering programs often focus on theory and conceptual design, while engineering technology programs usually focus on application and implementation.

Also, engineering programs typically require additional, higher-level mathematics, including multiple semesters of calculus and calculus-based theoretical science courses. Engineering technology programs typically focus on algebra, trigonometry, applied calculus, and other courses that are more practical than theoretical in nature.

### Career Paths

Graduates from engineering programs are called engineers. They often pursue entry-level work involving conceptual design or research and development. Many continue on to graduate-level work in engineering.

Graduates of four-year engineering technology programs are called technologists, while graduates of two-year engineering technology programs are called technicians. These professionals are most likely to enter positions in sectors such as construction, manufacturing, product design, testing, or technical services and sales. Those who pursue further study often consider engineering, or facilities management, or business administration.

Of course, there is much overlap between the fields. Engineers may pursue MBAs and open their own consulting firms, while technologists may spend their entire careers in design capacities.

### Differences in ABET Accreditation

For ABET accreditation, engineering and engineering technology programs are reviewed and accredited by two separate accreditation commissions, using two separate sets of accreditation criteria: the Engineering Accreditation Commission and the Engineering Technology Accreditation Commission.

## Wisconsin Assembly Hearing on AB 60

### Testimony of Ed Rodden, II, E.I.T.

March 1, 2017

My name is Ed Rodden II. I reside at 2737 Oakcrest Drive, within Waukesha County, southeastern Wisconsin. I am licensed as an Engineer In Training issued May 2008 in the State of Wisconsin. I spent 20 years in the industry with 10 as a technician and the remainder as an Engineer In Training. I hold both an Associate Degree in Civil Engineering Technology and a Bachelor of Science in Civil Engineering. Being a nonprofit executive supporting the engineering profession in their efforts to protect public safety and health. I am encouraged that Wisconsin is looking to improve the titling of engineers.

Before this bill, the title "engineer" has been used when talking about a train operator, a boiler operator, a lead mate on a ship and for graduate engineers who are in place to protect the public. With this bill, Wisconsin will reserve the title of "engineer" to those in state government who have a minimum education of a bachelor of science in engineering.

From a national perspective, AB 60 will be moving Wisconsin in the right direction. There are other provisions in Wisconsin's statutes that affect comity with other states. But we will offer suggestions at another time. We are aware that the state of IL in their law since 1989 requires someone who uses the term "engineer" in their title that they must be a licensed Professional Engineer with penalties. The preference here is reserved for those licensed, professional engineers but we in Wisconsin have other legislation which needs to be passed for this objective to be reached. AB 60 is moving Wisconsin in this direction.

I support most of Assembly Bill 60, which speaks of improving the understanding by the general public as to when it is appropriate to use the title of "engineer" for state employees. I would also encourage that the private sector be included with this bill therefore including all engineers in Wisconsin. I do disagree with the reference to a math degree.

Although math is a stepping stone into the sciences and a prerequisite for any engineering curriculum class work, math by itself does not provide sufficient ability to be titled an engineer. Engineering is profession which uses the principles of engineering and science to design structures, machines and systems. A degree in math does not provide or include study of engineering principles and the related sciences.

Thank you for the opportunity to speak with you today about a bill intended to improve the title "engineer" in the great State of Wisconsin!

Ed Rodden II, E.I.T.

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ABET (formerly the Accreditation Board for Engineering and Technology) evaluates 2-year and 4-year engineering technology and 4-year engineering programs all differently. Only the 4-year engineering program accredited by ABET is expected to prepare a student for professional licensure.

**It is GREAT that you are considering engineering as a career path!** Serving the public as a licensed Professional Engineer can be particularly rewarding. If you think you may want to pursue licensure, we encourage you to pursue a 4-year engineering degree from an ABET-accredited engineering college as a starting point. WSPE also encourages licensure for engineers who may never work directly for the public or on projects that will be used/occupied by the public.



## QUESTIONS?

Please feel free to contact the **Wisconsin Society of Professional Engineers** for additional information and insight on engineering as a career, and how to best start your journey to becoming an engineer.

### **WSPE Contacts:**

[execdir@wspe.org](mailto:execdir@wspe.org)

*Links to additional information on the engineering profession and licensure:*

#### **Licensure:**

<http://www.nspe.org/Licensure/index.html>

#### **What is a PE?**

<http://www.nspe.org/Licensure/WhatisaPE/index.html>

#### **How to Get Licensed?**

<http://www.nspe.org/Licensure/HowtoGetLicensed/index.html>

#### **Why Get Licensed?**

<http://www.nspe.org/Licensure/WhyGetLicensed/index.html>

#### **Resources:**

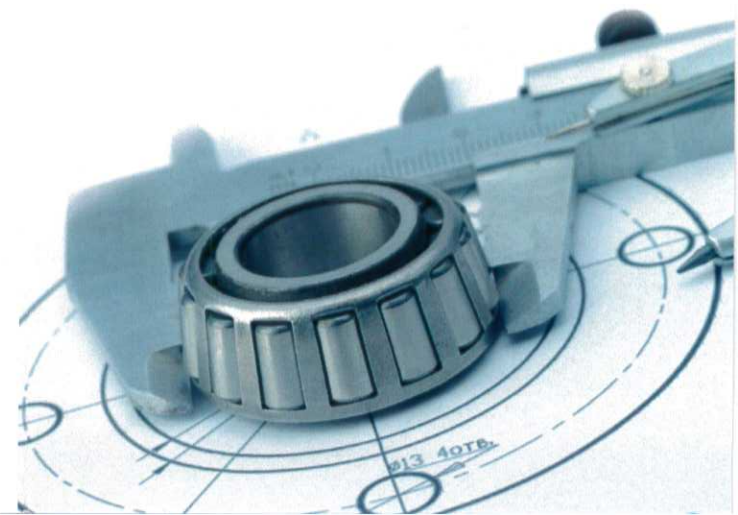
<http://www.nspe.org/Licensure/Resources/index.html>

<http://www.asce.org/>

<http://www.wspe.org>



# Thinking about pursuing a career in ENGINEERING?







## That's excellent!

Engineering can be a very rewarding experience, not only as a great way to earn a living, but also as a satisfying experience of improving the everyday lives of the general public.

### What do engineers do?

### What is a licensed Professional Engineer (PE)?

"Engineer" is a broad term that many job descriptions may include. Position titles such as Maintenance Engineer, Boiler Engineer, Communications Engineer, and Engineer (operators of trains or other heavy equipment or engines) are examples of job titles that have developed over the years. These jobs are very important in today's workforce, but they may not embody the true definition of engineering. Many of these jobs are very important skilled trades but they normally only require a 2-year associate

degree and should be titled "technician" or "engineering technician," not "engineer." Note there are also 4-year engineering technology degrees available for becoming an "engineering technologist."

A second grouping of engineering positions does require a 4-year Baccalaureate degree in engineering, but typically does not require licensure to practice by the state in which the work is taking place. Engineers who work for private manufacturers which sell their products, rather than engineering services, to individuals and various entities are examples of engineers who often fit into this grouping. Note that engineers in this type of engineering field sometimes pursue licensure from their state, but such licensure is normally not required to perform their job duties. Note: licensure is recommended for expert witness endeavors and for giving testimony for lawsuits.

A third grouping consists of engineers who are in charge of other engineers and engineering projects and offer their services to third parties. Examples are engineers who are involved in such projects as large buildings, roadways, bridges, water purification

facilities and waste water plants. To hold paramount the health, safety and welfare of the public, engineers who offer their services to the public or are in charge of public projects are required to be licensed by the state in which the work takes place.

Requirements for licensure vary slightly from state to state, but the typical requirements are:

- A 4-year degree in engineering from an ABET-accredited engineering program
- Passage of the 6-hour Fundamentals of Engineering (FE) exam, followed by
- Four years of engineering work experience under the supervision of a licensed Professional Engineer, followed by
- Passage of the 8-hour Principles and Practice of Engineering (PE) exam.



Engineering – the application of scientific principles to practical ends in the design, construction and operation of efficient and economical structures, equipment, and systems.

