AAWRE and Specialty Board Certification Today

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In the beginning...

- Advanced certification of sanitary engineers (1955)
  - American Engineering Intersociety Board (now AAEES).
  - ASCE was a sponsoring organization.
- Civil Engineering Certification, Inc. (CEC) (2004)
  - AAWRE launched as pilot program with support of EWRI.
  - Other civil engineering specialty academies added later.
Board Certification in ASCE

- ACOPNE: Academy of Coastal, Ocean, Port and Navigation Engineers (2009).
- Additional specialties on the horizon.

These represent the highest specialty certifications available in Civil Engineering.
What is a Diplomate (D.WRE)?

- A person who holds a diploma, especially a physician qualified to practice in a medical specialty by advanced training and experience in the specialty followed by passing an intensive examination by a national board of senior specialists. [Merriam Webster Dictionary]
- Now also, a civil engineer qualified in a civil engineering specialty by...
AAWRE Vision & Mission

**Vision**
Board certified water resources engineers are global leaders serving society in advancing sustainable management of the world’s water.

**Mission**
Improve the practice, elevate the standards, and advance the profession of water resources engineering for the benefit of the public. [AAWRE Bylaws]
Delivering on the Mission: Academy Objectives

- Identify and certify engineers with specialized knowledge in water resources.
- Recognize the ethical practice of water resources engineering.
- Encourage life-long learning and continued professional development.
- Enhance the practice of water resources engineering.
- Support/promote positions on water resources issues important to the public health, safety and welfare.
Delivering on the Mission: Primary Activities

- **Board Certification**
- **Awards**
  - Outstanding Practitioner in Water Resources Engineering
  - Service to the Academy
  - Outstanding Research and innovation in Water Resources Engineering
- **Other Activities**
  - Educational/professional development
  - RFP language
  - Promotion at conferences

Over 700 have been board certified in WRE
Where do we go from here?

~1400 have been board certified by CEC Academies

Potential for CEC Certification

<table>
<thead>
<tr>
<th></th>
<th>Within ASCE</th>
<th>Beyond ASCE</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Market</td>
<td>12,000</td>
<td>49,000</td>
<td>61,000</td>
</tr>
<tr>
<td>% Likely to Pursue Certification</td>
<td>10 – 20</td>
<td>5 - 10</td>
<td></td>
</tr>
<tr>
<td>Attainable Market</td>
<td>1,200 – 2,400</td>
<td>2,400 – 4,900</td>
<td>3,600 – 7,300</td>
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Source: Younger and Williamson 2013
How growth can happen:

1. Increase certification within ASCE membership within current academies.
2. Expand the specialty disciplines, e.g. transportation, structures.
3. Increase certification beyond ASCE in all disciplines.
4. Increase penetration rates from 5-20 percent to 50 or 60 or 70 percent.
Challenges and Opportunities

- Need wider recognition by the public, engineers, employers, and procurers of engineering services.
- Lack of scale makes investments difficult to maintain.

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- Capacity of ASCE to leverage its information and marketing programs to promote board certification.
- Overcome misperceptions of attainability of board certification – Career step rather than lifetime achievement.
Doctors are **required** to have a state medical license.

Doctors **choose** to seek board certification by demonstrating:
- Specialty training, skill, knowledge
- Additional experience
- Commitment to improving care

Hospitals, insurance companies, and patients seek out board certified doctors.
Alternative Timelines

Medical Doctor

- Undergraduate Education
- Medical School
- Residency
- Board certified at age 29-33+
- License
- BD Cert
- Practice

Years: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Civil Engineer

- Undergraduate Education
- MS
- Work Experience
- Specialty Work Experience
- Practice

Years: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

- Graduate Education
- WE
- Specialty Work Experience
- Practice

Years: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

- Work Experience
- Specialty Work Experience*
- Practice

Years: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Board certified at age 34+
Differences in board certification for these “learned professions”

- Medical board certification process:
  - Extensive and well documented.
  - Recognized by hospitals, insurers, patients.
  - Written testing more rigorous than oral exams.
  - Recertification not annual.

- Medical board certification scale:
  - Over 40 specialty boards.
  - 950,000 licensed doctors (100%)
  - Over 750,000 board certified doctors (79%)
Need to take a broad view of the future of CE board certification

- Support and strengthen licensure
  - Entry point to professional practice.
  - Key to public acceptance and confidence.

- Significantly increase numbers of board certified engineers (expand disciplines)
  - Over 1.6 million engineers in 2016.
  - Close to 300,000 civil engineers in 2016.
  - Not all meet the education, training, and experience requirements.
“Occupational” Employment for 2016 in Science and Engineering

Source: Sargent 2017
Education Levels by Occupation

Source: Sargent 2017
Revisit the question of scale: What is the future of EWRI’s vision?

<table>
<thead>
<tr>
<th></th>
<th>Medical Doctors</th>
<th>Engineers</th>
<th>Civil Engineers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>% of Total</td>
<td>Number</td>
</tr>
<tr>
<td>Total</td>
<td>950,000</td>
<td>n.a.</td>
<td>1,600,000</td>
</tr>
<tr>
<td>Licensed</td>
<td>950,000</td>
<td>100%</td>
<td>320,000</td>
</tr>
<tr>
<td>Advanced Degree</td>
<td>950,000</td>
<td>100%</td>
<td>480,000</td>
</tr>
<tr>
<td>Board Certified</td>
<td>750,000</td>
<td>79%</td>
<td>3,700</td>
</tr>
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**Needs:**
- Higher rates of licensure.
- Higher rates of advanced education.
- Higher rates of board certification.
- Expansion beyond civil engineering.
Collaboration: Within and beyond ASCE

- ASCE:
  - Unify policy statements.
  - Define civil engineering specialties.
- AAEES: Over 2300 board certified environmental engineers in several specialties.
- Structural Engineers Certification Board (SECB)
- Institute of Transportation Engineers (ITE)
- NSPE: Advocate for licensure.
- NCEES: Licensure.
- Academics: raising expectations of students.
Specialty board certification:
- Enhances public health, safety, and well-being.
- Advances the profession and individual careers.

Collaborate across disciplines – think beyond civil engineering.

Support and strengthen PE licensure.
- Credibility for the profession.
- Parallels medical licensure/board certification.

Why?
Because…
It matters!