30 by 30 Data

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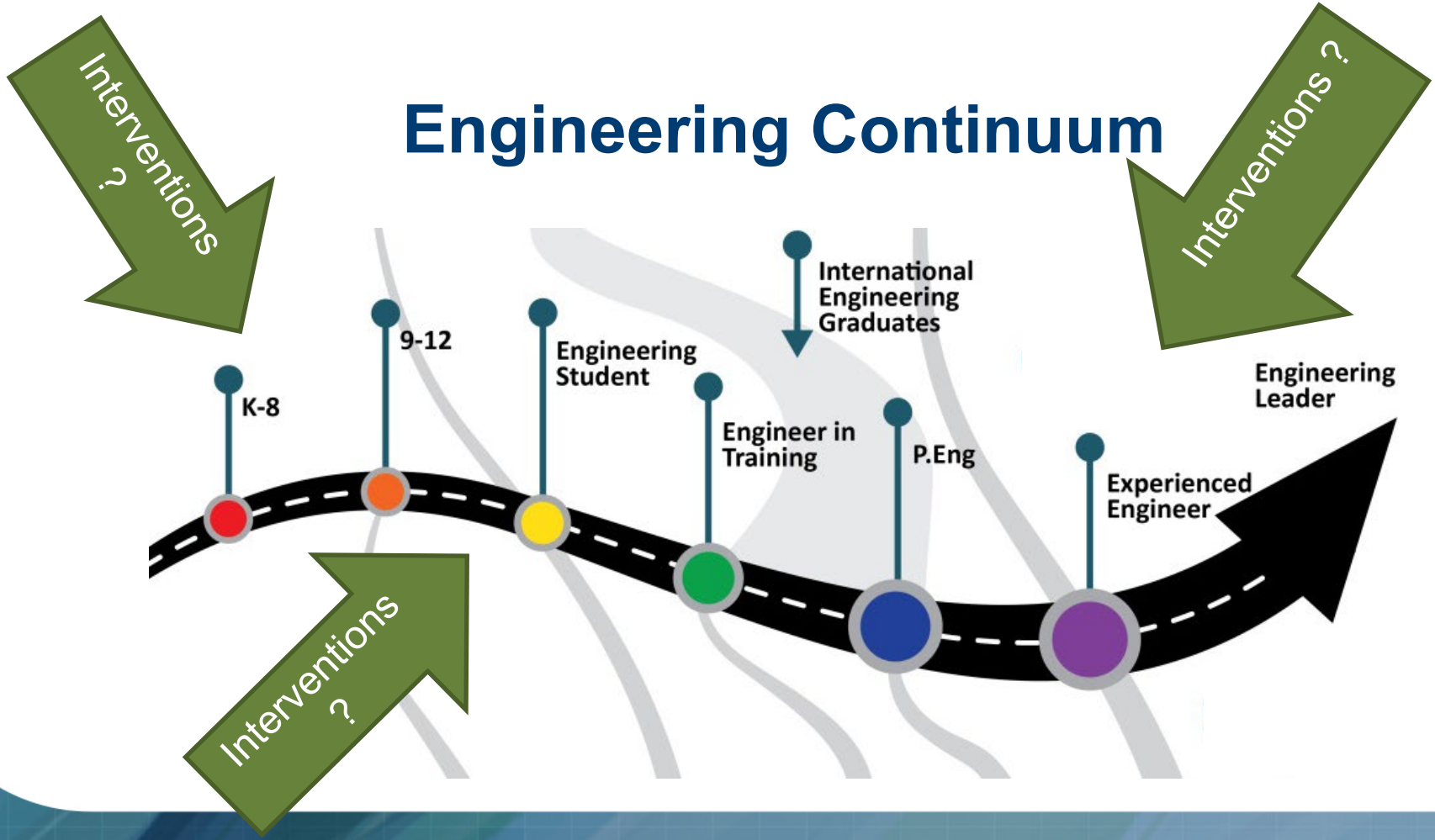
Overview

1. Engineering Continuum
2. What are we measuring?
3. Where are we now?
4. Cohort analysis
5. How do we get to 2030?
6. What are the insights?
7. Next Steps

Engineering Continuum



What are we measuring?

- What does Engineers Canada's 30 by 30 data include?
  - Newly licensed Engineers Canada Accreditation Board trained P. Eng.'s
  - Newly licensed Internationally trained P. Eng.'s and Newly licensed non-CEAB trained P. Eng.'s
  - License granted in calendar year (Jan.-Dec.)
  - Members in good standing

30 by 30 data

- What does Engineers Canada's 30 by 30 data NOT include?
  - Agreement on Internal Trade Applicants
  - Temporary license holders
  - Resignation or failure to pay dues

Enrolment and degrees awarded report

- CEAB criteria
- Undergraduate enrolment, gender breakdown, Indigenous self-identification (< 50% of schools report)
- Degrees awarded
- Graduate studies
- International/Visa students

Where are we now?

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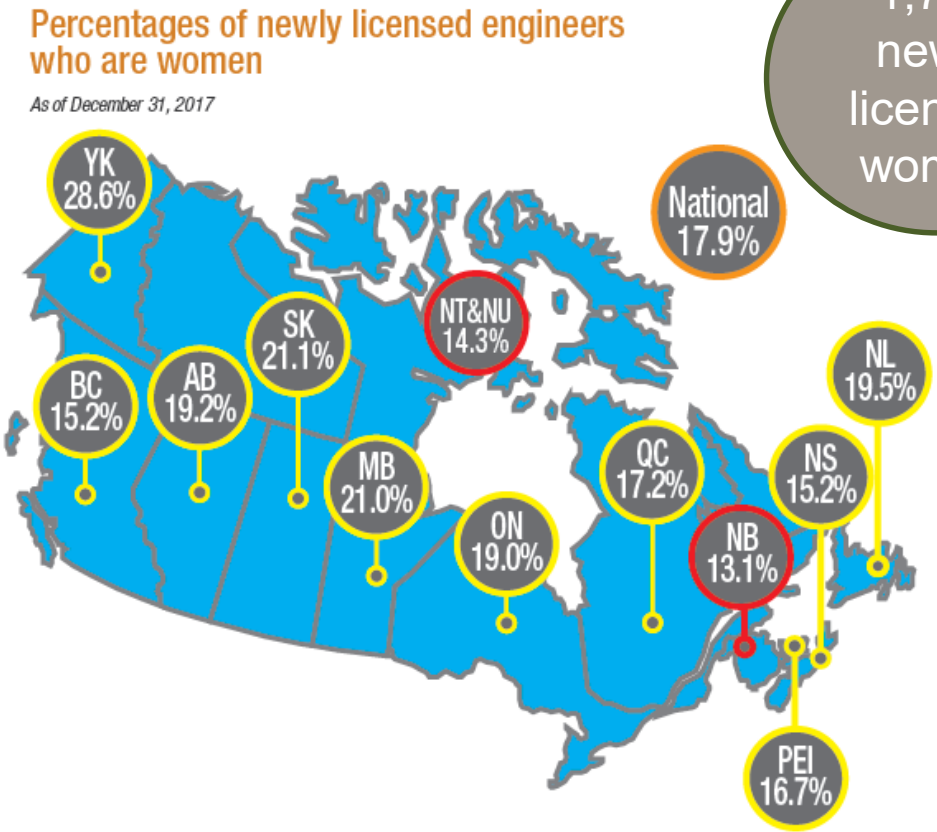
Where are we now? 2017 data

Newly licensed engineers who are women



1,763 newly licensed women

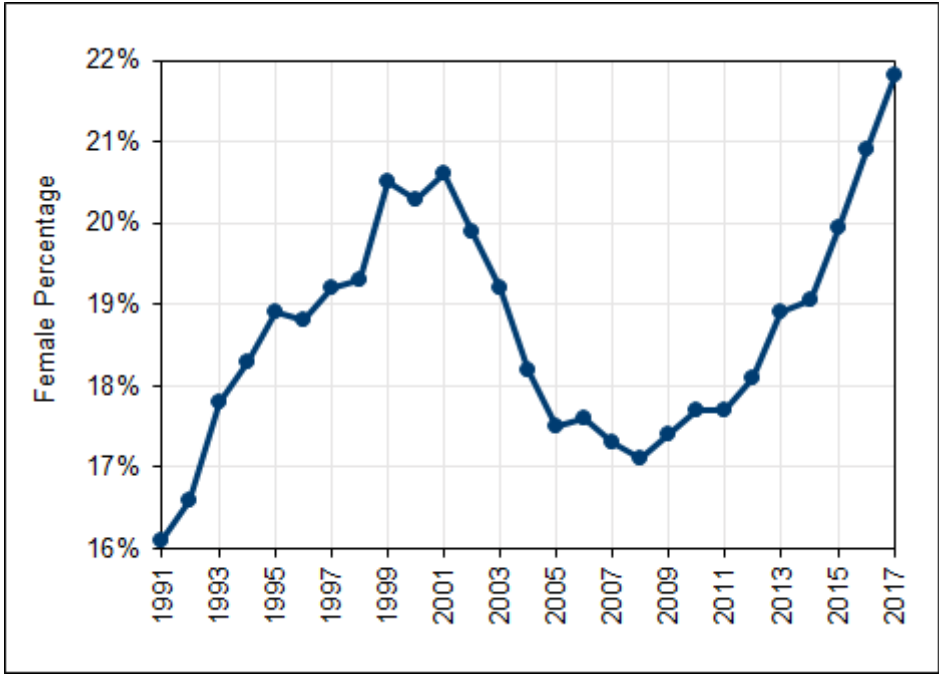
Newly licensed engineers who are women

Date	# of newly licensed women	Per cent of total
2014	1,517	17.0%
2015	1,652	16.8%
2016	1,482	17.2%
2017	1,763	17.9%

Female undergraduate degrees awarded

- 19% average proportion of undergraduate degrees awarded to female students between 2012-2017
- 19% average proportion of undergraduate enrolment over the same period
- = not a significant gender difference in completion rates

Female undergraduate enrolment

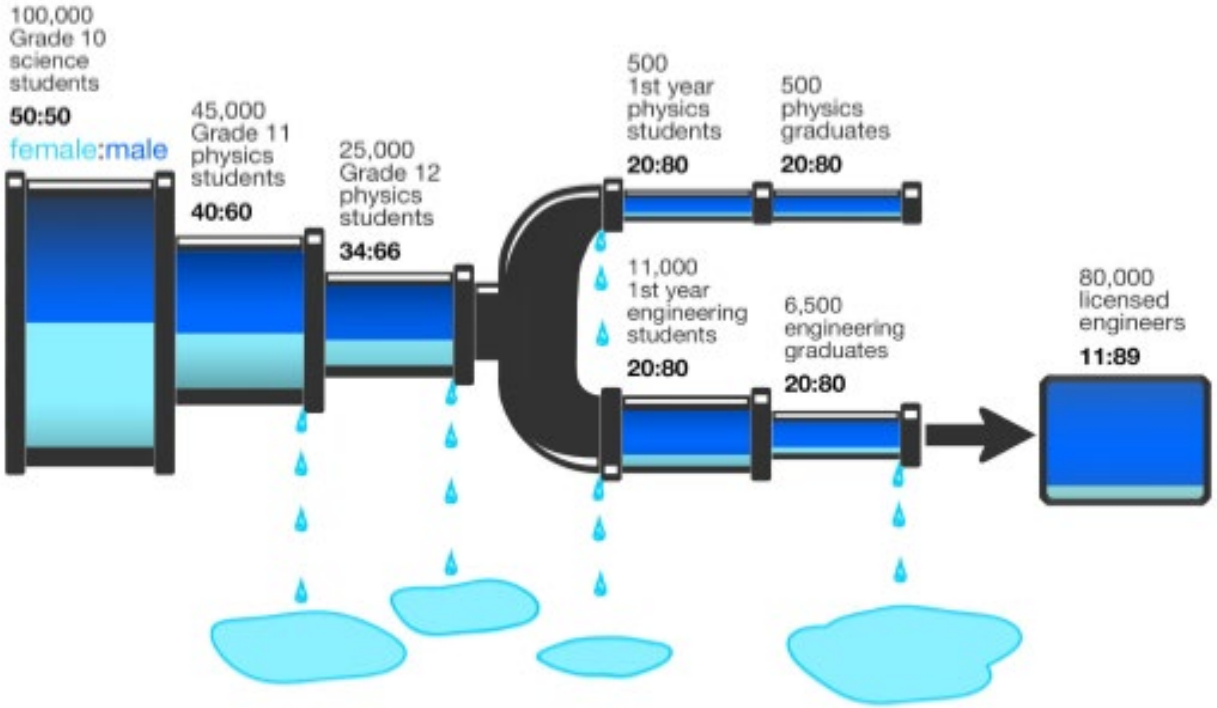


Female undergraduate enrolment

Top 10 universities with highest number of female enrolment in 2017

Institution	# female	% female
Waterloo	1,460	25.4 %
University of Toronto	1,458	32.0%
Polytechnique	1,386	27.8%
UBC	952	26.2%
Alberta	948	21.8%
Queen's	881	29.5%
Ryerson	873	20.7%
Carleton	762	17.2%
McMaster	756	20.8%
Concordia	743	21.5%

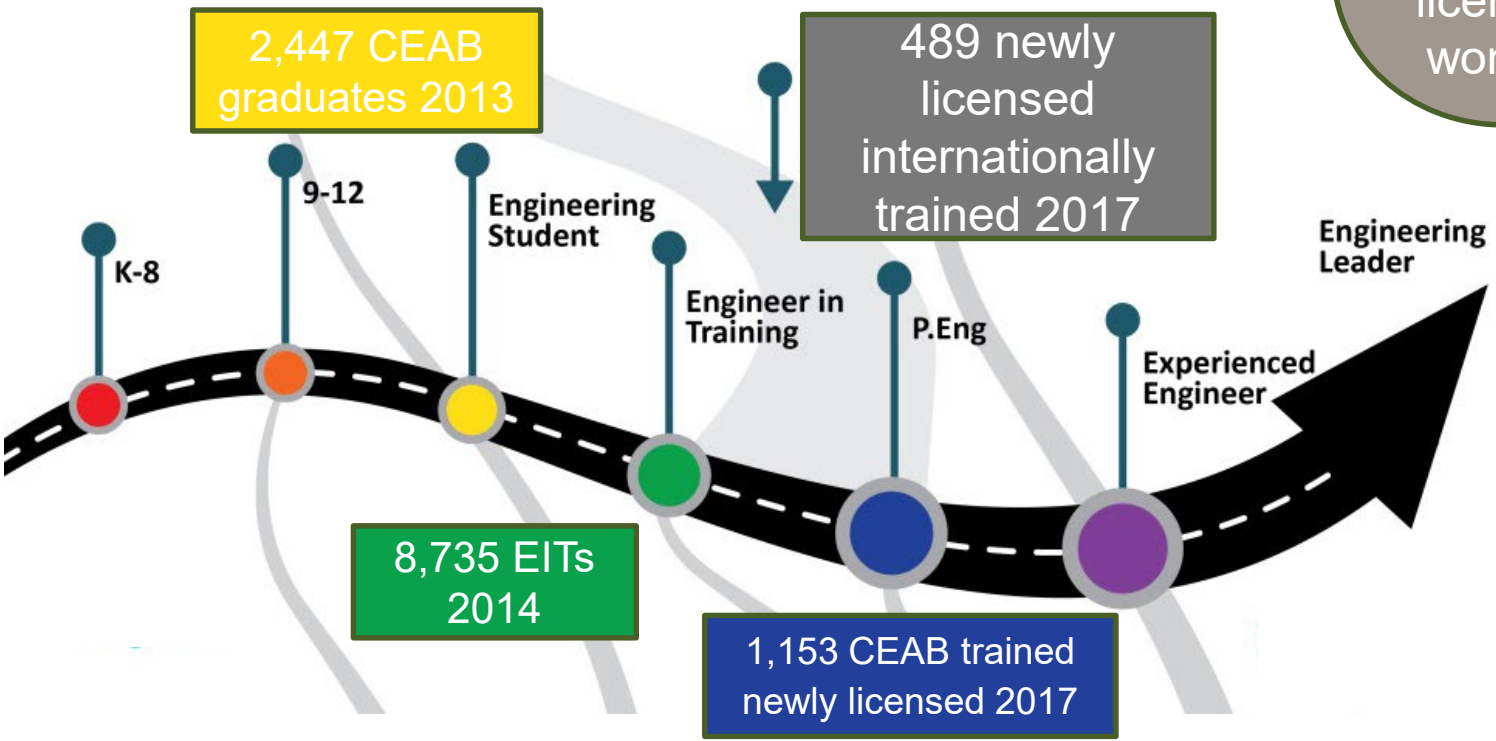
Ontario's Leaky Pipeline of Women in Engineering Education



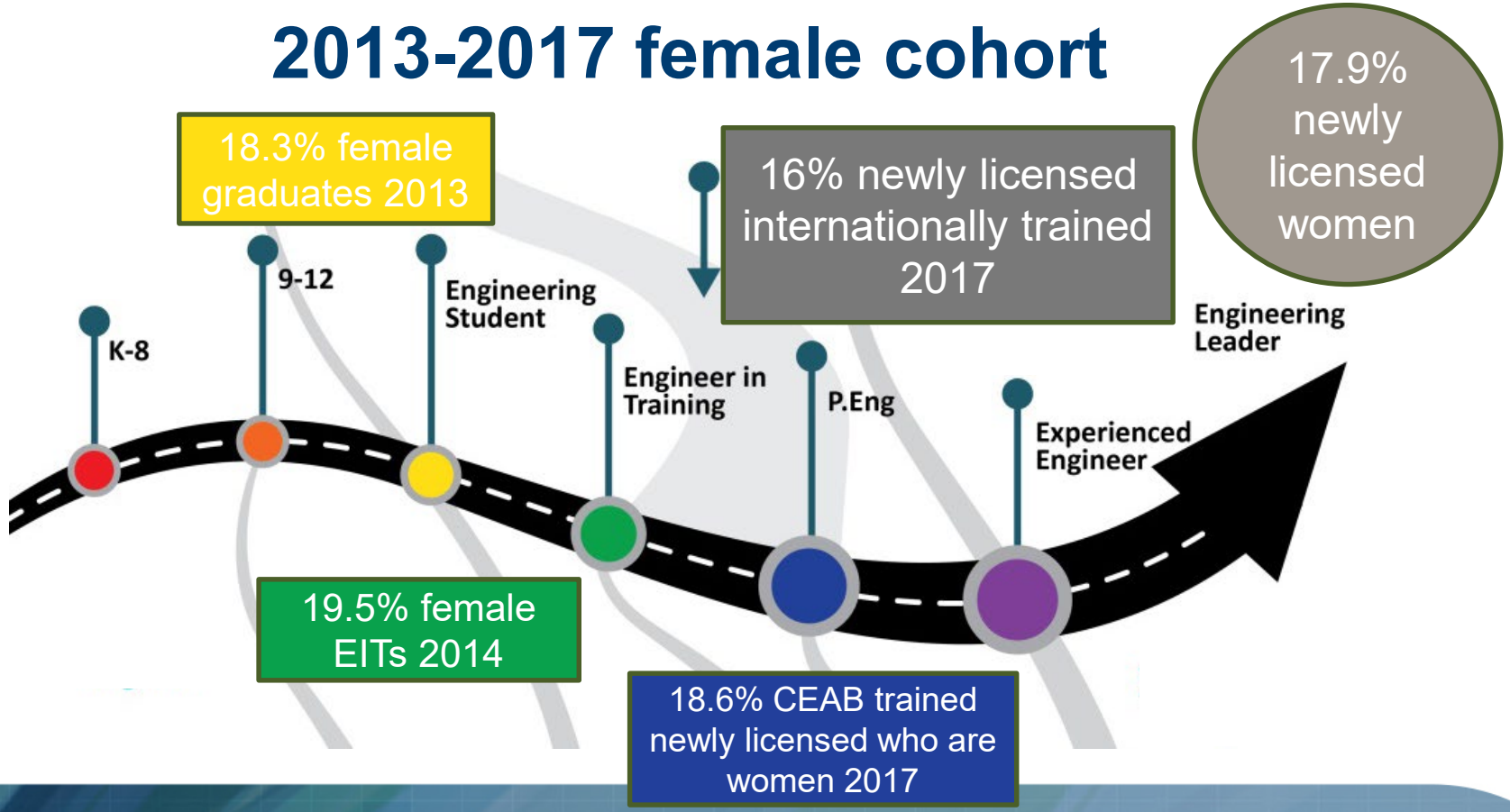
Cohort analysis

2013-2017 female cohort

1,763 newly licensed women



2013-2017 female cohort



CEAB Projection A- female degree growth rate

- 47% conversion graduation to licensure between 2013 to 2017
- Female degrees awarded- average growth rate of 7.8%
- Projected female degrees in 2025- 5,916
- IF we use the same 47% conversion for 2025 graduates getting their license in 2030 THEN
- 5,916* 47% = 2,780 CEAB newly licensed females in 2030
- IF CEAB grads make up 65% of newly licensed females THEN 2,780 *1.65 = **4,588**

CEAB Projection B- male degree growth rate

- Male degrees awarded- 4.34% average growth rate
- 12,538 male degrees in 2017 with 4.34% growth rate = **17,159** (Projected male degrees in 2025)
- IF we use the same 46.2% conversion for 2025 graduates getting their license in 2030 THEN
- **17,159** * 46.2% = **7,927** CEAB newly licensed males in 2030
- IF 62% males are CEAB trained THEN **7,927** * 1.62% = **12,842** total newly licensed males in 2030

Projecting using degree growth rates

- IF 62% newly licensed males are CEAB trained THEN **7,927** * 1.62% = **12,842** total newly licensed males in 2030
- IF 65% newly licensed females are CEAB trained THEN 2,780 *1.65 = **4,588** total newly licensed females in 2030
- **12,842 + 4,588 = 17,430* newly licensed engineers in 2030**
- Women (4,588) would make up **26.3%** of newly licensed engineers in 2030

- [FYI 30% of this = **5,229 females]**

CEAB Projection D- newly licensed growth rate

- 5.9% average growth rate of newly licensed female engineers between 2015 to 2017*
- 2017 newly licensed CEAB female engineers- 1,153
- Projection= 1,153 * 1.058 (growth rate) = **3,007 in 2030**
- Average growth rate of total newly licensed engineers of 4% annually, gets us to **16,424** newly licensed engineers by 2030, 30% of that is **4,927** female engineers as the goal for 2030
- *This projection is higher then the projection based on CEAB grad rates (*4,588 newly licensed in 2030)

How do we get to 30 by 30?

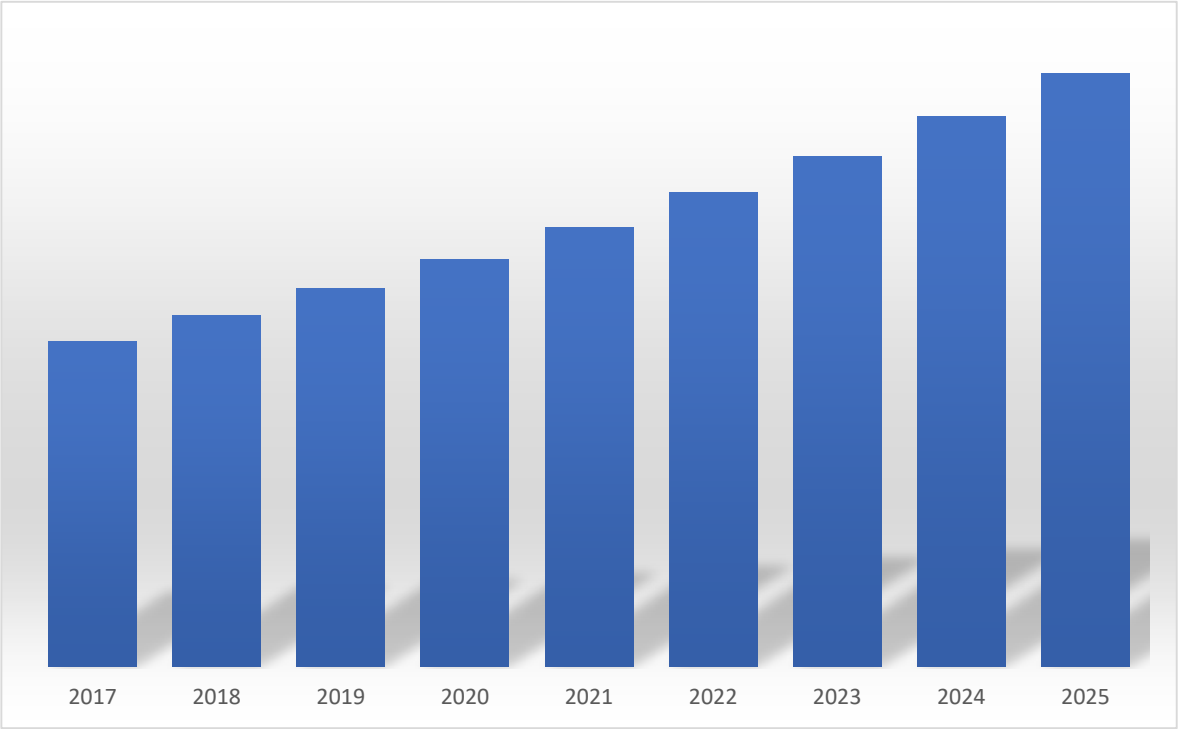
To get to 30% newly licensed we will need…

- Based on licensure projections - **4,927 females newly licensed in 2030**
- CEAB females grads getting licensed would be 4,927 * 65% = **3,202**
- Currently CEAB grad growth rate projects a total of **5,916** female grads in 2025
- IF CEAB newly licensed female grads need to be 3,202 in 2030, then **54.1% (3,202 / 5,916)** of the CEAB projected female graduates need to get their license
- **Conversion between graduation and licensure must increase by ~10%**

The problem with projections

- 2017 newly licensed male engineers- 8,095
- 2017 newly licensed female engineers-1,763
- 2030 - to get to **4,927 (30%)** newly licensed female engineers there needs to be increased capacity to support these young women as EIT/MITs. Can this increase be supported by the current system?

The problem with projections



Female undergraduate degrees awarded

The problem with projections

- EIT/MIT pathway- since the first analysis we received feedback that the time between graduation and licensure is probably closer to 5 years. Difficult to calculate graduation to licensure conversion when we do not know the average time in EIT/ MIT programs

- Another assumption is that that existing patterns will continue into the future. This assumption is more likely to be correct over the short term than it is over the long term.

Insights vs. numbers

- Due to the high degree of variability in the projections and the number of assumptions we have to make, we will focus on the insights we have can gain from the data, instead of making conclusions or setting numeric goals for recruitment, retention and professional development

What are the insights?

- Recruitment efforts in post-secondary are growing female participation and EIT/MIT programs
- Retention efforts in keeping women in EIT/MIT programs and licensed
  - Connect regulators to female students, to keep them in the pathway, support their needs, get them licensed
  - Conversion between graduation and licensure: promote the value of the license broadly to increase conversion rate.
- Professional development- increasing the presence of women in leadership positions

Discussion

Thank you!

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