

The Engineering Skills Shortage- Fact or Fiction ?

OSPE Labour Market Presentation

This presentation can be downloaded at
www.ospe.on.ca/presentations

OSPE Underemployment Working Group
Sep 2014



ONTARIO
SOCIETY
OF PROFESSIONAL
ENGINEERS

The Engineering Skills Shortage - Fact or Fiction ?

.....

Outline of Presentation

- ✧ Data Sources
- ✧ Is There Really a Skills Gap?
- ✧ Global Competition and Its Impact
- ✧ Societal Value Changes and Their Impact
- ✧ Changing Employer Views on Training and Their Impact
- ✧ Supply-Demand Gaps and Their Impact
- ✧ Skills Demanded by Employers
- ✧ Producing Job-Ready Engineers
- ✧ Some Hopeful Signs
- ✧ What Individual Engineers Can Do
- ✧ Q&A period.

The Engineering Skills Shortage - Fact or Fiction ?

.....

Data Sources for Today's Presentation

- ✧ Statistics Canada Census for 1995, 2000 & 2005, 2011 National Household Survey
 - ✧ Citizen and Immigration Canada – Immigration data
 - ✧ Engineers Canada - Labour market and employer surveys
 - ✧ Prism Economics and Analysis, *2010 Survey of Working Conditions for Engineers*, May 2011
 - ✧ Prism Economics and Analysis, *Skills Shortage in the Engineering Labour Market*, June 2013
 - ✧ Council of Ontario Universities 2014 report – *Employment Outcomes of 2012 Graduates*
 - ✧ The Conference Board of Canada, Sep 4, 2013, *Skills Mismatches and the Economic Impact in Ontario*.
 - ✧ OSPE 2014 Employer Survey, *"From the World to the Workforce: Hiring and Recruitment Perceptions of Engineering Employers and Internationally Trained Engineers in Ontario"*.
 - ✧ TD Economics, Oct 22, 2013, *Jobs in Canada – Where, What and for Whom?*
 - ✧ If you are interested in the other labour market information, please visit OSPE's website at:
http://www.ospe.on.ca/?page=adv_issue_elms
-

The Engineering Skills Shortage - Fact or Fiction ?

.....

Is There Really a Skills Gap?

OSPE member & employer surveys and labour market data analysis suggest:

- ✧ Employers are demanding sector specific specialization before they hire.
- ✧ New graduates, immigrant engineers and engineers trying to move from a declining sector to a growing sector do not have required sector skills.

Resulting in:

- ✧ Engineers with no jobs.
- ✧ Jobs with no engineers.
- ✧ Employers complaining they can't find qualified engineers.
- ✧ Engineers complaining they can't qualify for available engineering jobs.

Why is this happening?

.....

The Engineering Skills Shortage - Fact or Fiction ?

.....

Global Competition and Its Impact

- ✧ Production moves to lowest cost countries.
- ✧ Reduction of employment in some Ontario sectors (e.g. manufacturing) and associated engineering jobs.
- ✧ Global competition also drives corporate cost reductions:
 - ✧ Lower training budgets - elimination of paid internships, mentoring, on-the-job training and employer sponsored courses.
 - ✧ More shorter-term on-demand projects (fee for service models).
 - ✧ Reduction of in-house functions (Training, R&D, Engineering, etc.).
 - ✧ Reduced benefits (e.g. defined contribution instead of defined benefit pension plans).
 - ✧ Reduced wages (e.g. CAW/UAW contract for new employees).

The Engineering Skills Shortage - Fact or Fiction ?

Societal Value Changes and Their Impact

- ✧ More young people in post secondary education (over 60% in Ontario); and,
- ✧ More highly educated immigrants arriving in Canada.

Resulting In:

- ✧ More highly educated individuals seeking limited job opportunities.
- ✧ More post secondary graduates working in jobs that do not require their level of education (underemployed).

The Engineering Skills Shortage - Fact or Fiction ?

.....

Changing Employer Views on Training and Their Impact

- ✧ Universities focus on academic learning driven by Canadian Engineering Accreditation Board (CEAB) requirements and rely on employers to do the sector specific training.
- ✧ Employers have eliminated sector specific training programs - now <35% of large firms and <15% of small firms have formal training programs - and are relying on universities or “others” to provide the sector specific training.

Resulting in,

- ✧ Many engineers do not have the required specialized skills to qualify for work in the sectors that have job openings.

The Engineering Skills Shortage - Fact or Fiction ?

.....

Supply-Demand Gaps and Their Impact

✧ Annual demand for new jobs in Ontario from economic growth	850
✧ Replacement demand (retirements, deaths, exit from profession)	<u>4,200</u>

Total Estimated Ontario Annual Demand 5,050

✧ New university engineering graduates entering the ON labour market	5,734
✧ Temporary foreign worker engineers	2,085
✧ Permanent immigrant engineers	<u>1,430</u>

Total Ontario Annual Supply 9,249

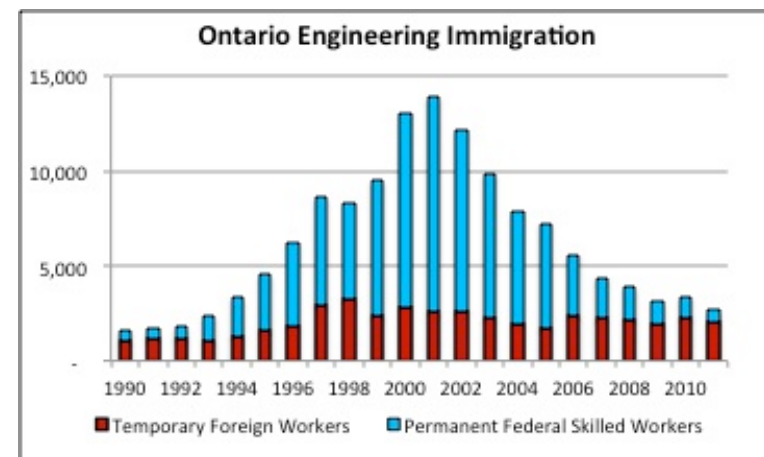
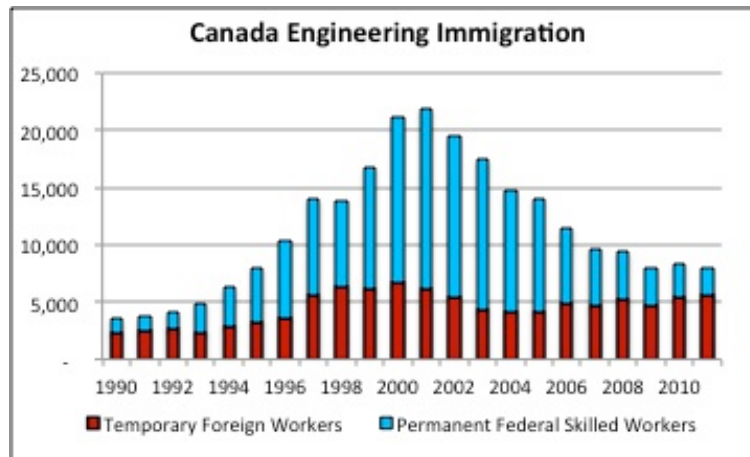
Notes:

- Data courtesy of Prism Economics and Analysis, report titled Skills Shortage in the Engineering Labour Market, June 2013.
- The data above does not reflect the accumulated surplus of previous years.

The Engineering Skills Shortage - Fact or Fiction ?

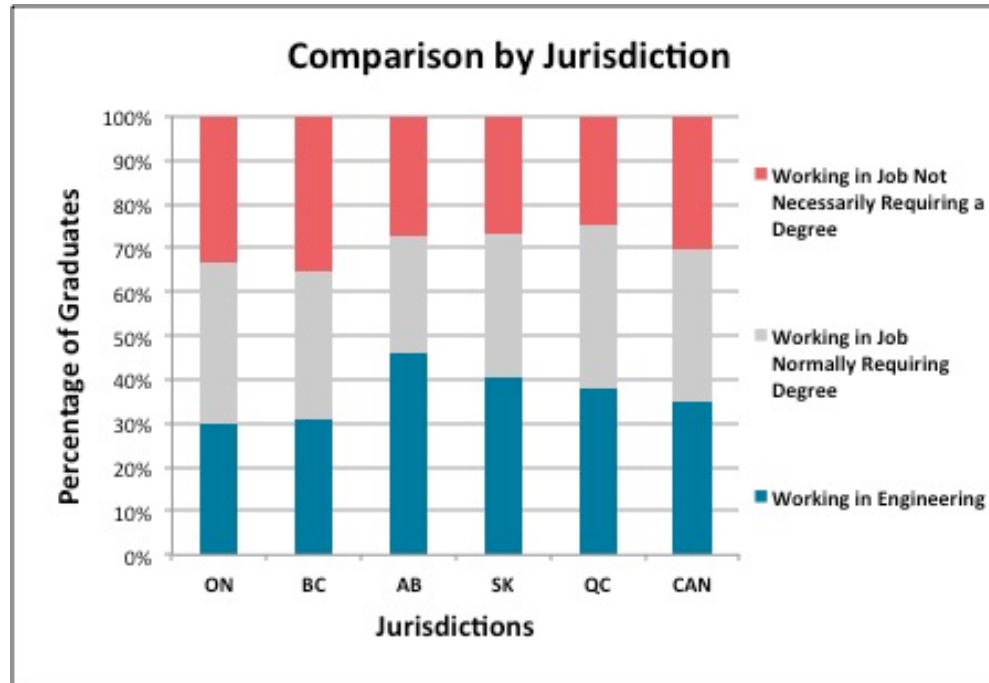
Supply-Demand Gaps and Their Impact

- ✧ Accumulated immigration surplus from prior years still exists.
- ✧ Some of these individuals will no longer find engineering employment because employers typically do not hire engineers who have not done engineering work for more than 2 to 5 years, even less for high tech sectors.



The Engineering Skills Shortage - Fact or Fiction ?

Supply-Demand Gaps and Their Impact



Note: Engineering job data is from the StatsCan 2011 National Household Survey.

The Engineering Skills Shortage - Fact or Fiction ?

.....

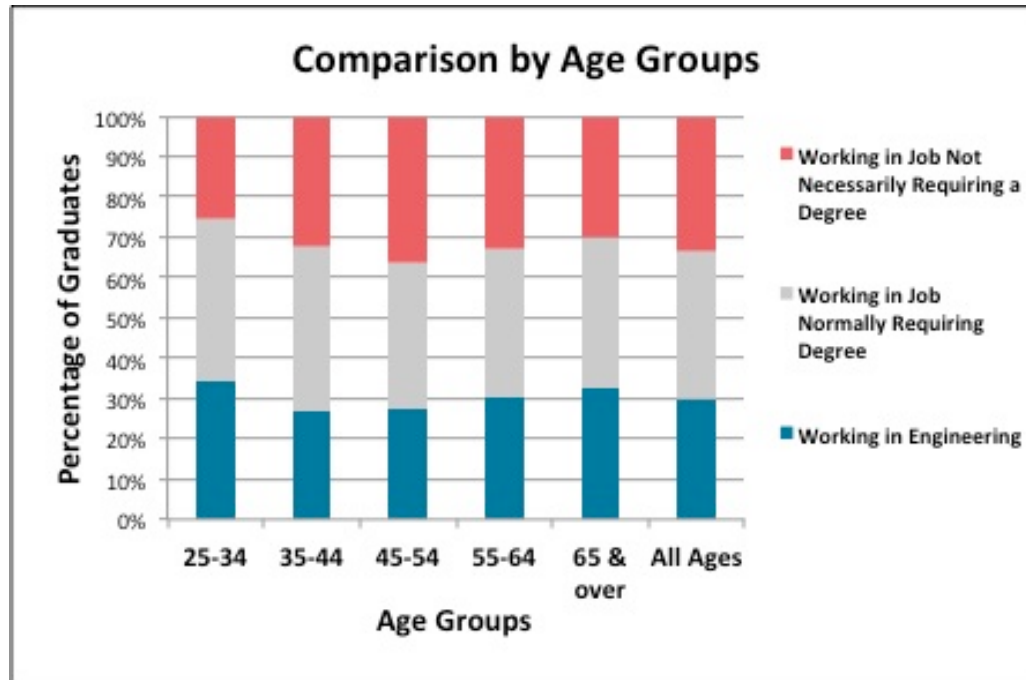
Supply-Demand Gaps and Their Impact

- ✧ Council of Ontario Universities 2014 survey of 2012 graduates shows 6% of engineering graduates are still unemployed 2 years after graduation.
- ✧ StatsCan 2011 National Household Survey indicates only 34% of engineering graduates ages 25 to 34 have engineering jobs, another 25% are in jobs that do not require any university degree. OSPE considers these latter individuals underemployed.
- ✧ OSPE studies show that there are many more individuals looking for engineering work than there are engineering vacancies. Therefore:
 - ✧ Improving skills is not a complete solution to underemployment.
 - ✧ Public policy must focus on creating more engineering jobs because engineering jobs drive prosperity throughout the economy.

The Engineering Skills Shortage - Fact or Fiction ?

.....

Supply-Demand Gaps and Their Impact



Note: Engineering job data is from the StatsCan 2011 National Household Survey for Ontario.

The Engineering Skills Shortage - Fact or Fiction ?

.....

Supply-Demand Gaps and Their Impact

Impact on compensation:

- ✧ If there was a true overall shortage of engineers we should be seeing engineering salaries rising compared to inflation (CPI).
- ✧ Since the 2008/09 recession, Ontario engineering base salaries and total compensation have not kept up with inflation. Base salaries have risen 2.2%, total compensation has risen 0.8% and CPI has risen 7.3% over the past 4 years (OSPE employer salary survey and StatsCan data).

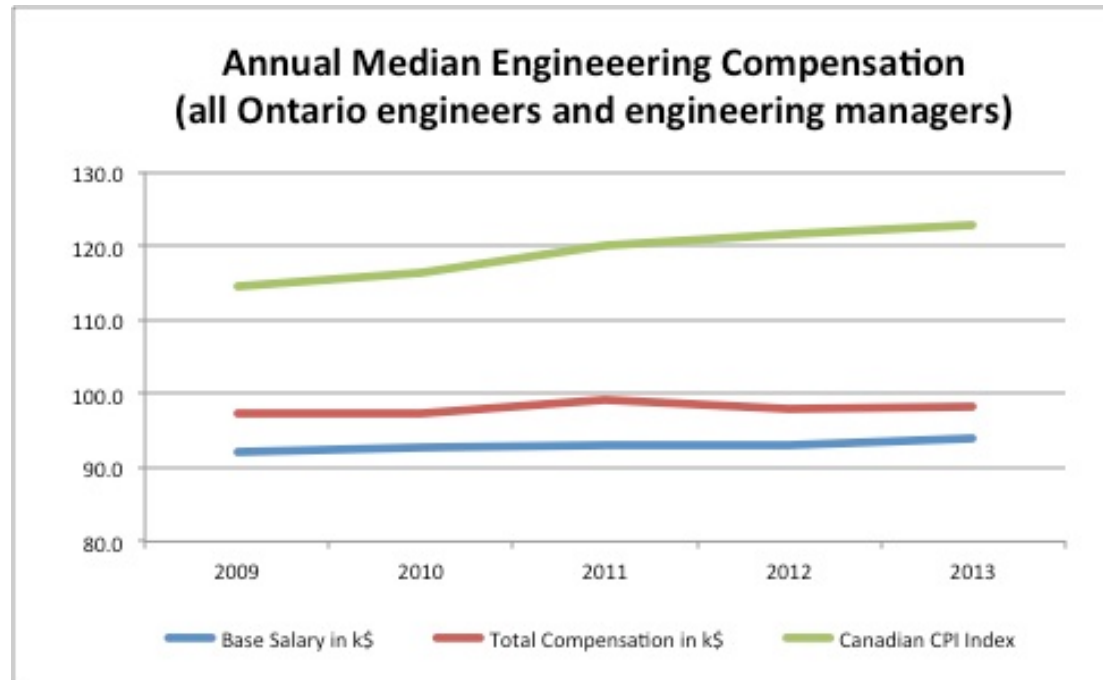
On the bright side:

- ✧ Engineering jobs still pay better than most non-engineering university level jobs.
 - ✧ Underemployment for engineers is lower than most other university degree programs.
-

The Engineering Skills Shortage - Fact or Fiction ?

.....

Supply-Demand Gaps and Their Impact



Note: Compensation data is from OSPE's Ontario employers salary survey.

.....

The Engineering Skills Shortage - Fact or Fiction ?

.....

Skills Demanded by Employers

- ✧ 5 years minimum sector specific work experience.
- ✧ Soft skills (e.g. communication, teamwork, writing, planning, etc.).
- ✧ Technical skills (e.g. knowledge of software tools used in the sector).
- ✧ Knowledge and experience applying local codes and standards (e.g. electrical, mechanical, safety codes, etc.).
- ✧ Knowledge of locally supplied products and services used by the sector.

The Engineering Skills Shortage - Fact or Fiction ?

.....

Producing Job-Ready Engineers

- ✧ Needs involvement of all 5 major parties – educational institutions, government, employers, employees and engineering regulators.
- ✧ Financial incentives for employers to offer junior positions with on-the-job training.
- ✧ Financial support for educational institutions to offer sector specific training.
- ✧ Opportunities for students to participate in summer, co-op and internship employment.
- ✧ Training programs need to be owned and specified by employers and accepted by engineering regulators.
- ✧ Students and engineers need to learn effective job search skills.

The Engineering Skills Shortage - Fact or Fiction ?

.....

Some Hopeful Signs

- ✧ New programs to improve employability of new graduates:
 - ✧ UNENE – university & industry initiative for the nuclear sector.
 - ✧ EPEEC – university/utility/labour initiative for electrical power engineers.
 - ✧ SME – Take Back Manufacturing (TBM) initiative and new Integrated Industrial Learning System (IILS) for the manufacturing sector.
 - ✧ Bombardier & Ryerson initiative for the aerospace sector.
 - ✧ OSPE – engineering employment events (E3), networking events, professional development courses jointly with employers.

The Engineering Skills Shortage - Fact or Fiction ?

.....

Some Hopeful Signs

- ✧ Ontario and Canada have made long term infrastructure investment commitments.
- ✧ Ontario Youth Jobs Strategy (job opportunities for 30,000 young people ages 15 to 29).
- ✧ For more info on the youth jobs strategy go to
<https://www.ontario.ca/jobs-and-employment/youth-jobs-strategy>
- ✧ Much more needs to be done by all parties involved.

The Engineering Skills Shortage - Fact or Fiction ?

.....

What Individual Engineers Can Do

- ✧ Don't get discouraged – depressed individuals don't interview well !
 - ✧ Develop your soft skills - teamwork, communication, organizational, presentation, leadership, etc.
 - ✧ Develop job search skills including resume writing & interview skills.
 - ✧ Develop technical knowledge and skills in the specific sector you are interested in by taking relevant professional development courses and/or self study.
 - ✧ Network and attend industry events – more than 2 out of 3 jobs are now obtained through personal referrals - businesses want to lower their risk of hiring the wrong person.
 - ✧ Use company websites and various job boards (including OSPE) for job searches.
-

The Engineering Skills Shortage - Fact or Fiction ?

.....

What Individual Engineers Can Do

- ✧ Consult OSPE's annual employers salary survey to see what the market is paying.
- ✧ Research the industry sector and company you want to work for.
- ✧ Keep your engineering knowledge up-to-date especially if you are not working.
- ✧ New graduates - register with PEO as an engineering intern – don't delay.
- ✧ Experienced immigrant engineers - register with PEO for a provisional license – don't wait for the full license.
- ✧ Don't accept unpaid internships unless they meet all 6 criteria in the Ontario Employment Standards Act – most engineering internships do not.
- ✧ Create your own job/business, if you are entrepreneurial.
- ✧ Stay positive and don't sell yourself short!

The Engineering Skills Shortage - Fact or Fiction ?

.....

Questions ?

Notes:

This presentation can be downloaded at:

http://www.ospe.on.ca/?page=adv_peochap

Would you like to become a member of OSPE? Visit:

<http://www.ospe.on.ca/?page=JOIN>



ONTARIO
SOCIETY
OF PROFESSIONAL
ENGINEERS

www.ospe.on.ca

.....

4950 Yonge Street, Suite 502, Toronto ON M2N 6K1

Tel: 416-223-9961 • Toll Free: 1-866-763-1654