



Aviation and Aerospace Industries Labour Market Information

Canadian Council for Aviation & Aerospace

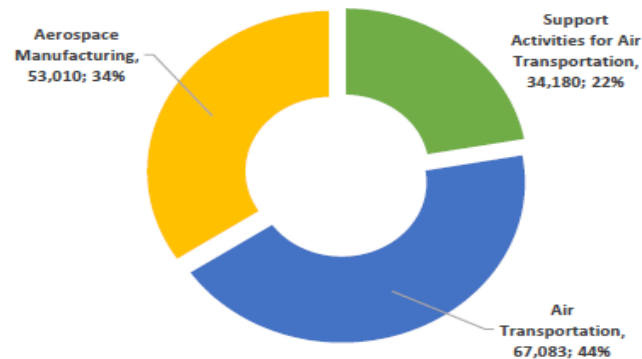


Funded by the Government of Canada

Aviation and Aerospace Employment

- Aviation and Aerospace employed an estimated 154,000 workers across Canada in 2016
- Air Transportation accounted for 44% of employment, followed by Aerospace Manufacturing providing 34% of employment, and Support Activities with 22%

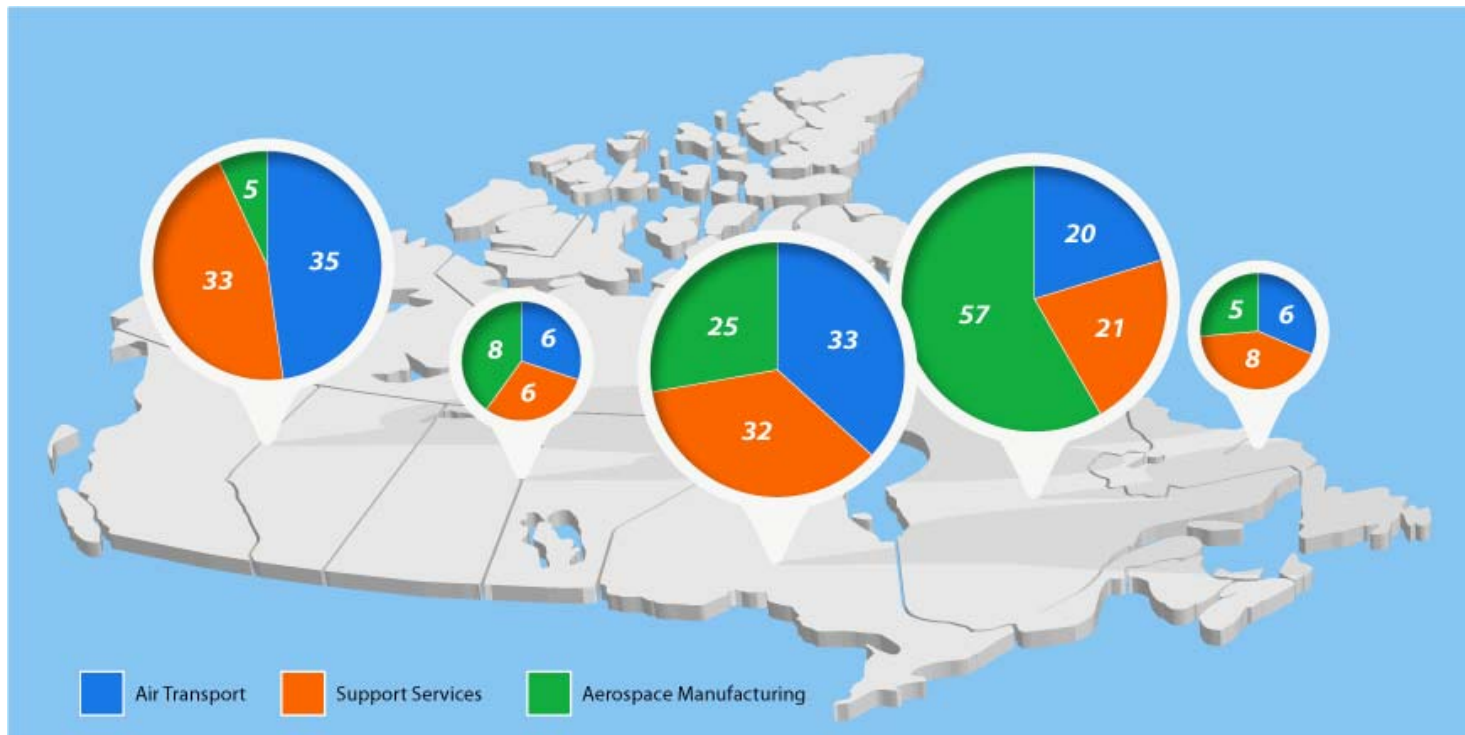
Aviation and Aerospace Employment Distribution, 2016



Source: Statistics Canada; Prism Economics and Analysis estimates and forecast, 2017; CCAA Aviation & Aerospace LMI Outlook report, 2017

Regional Distribution of Employment

Distribution of Employment in Aviation and Aerospace in Canada



Source: Statistics Canada; Prism Economics and Analysis estimates and forecast, 2017; CCAA Aviation & Aerospace LMI Outlook report, 2017

Educational Attainment

Employees with post-secondary education make up the majority of the industry's workforce with 72.3%. *This share is only 54.3% in the Canadian workforce.*

The industry workforce is more educated than the average for the Canadian workforce.

Educational Attainment	% Share in the Aerospace Industry	% Share in Total Workforce
Less than High School Education	5.2%	20.1%
High School Education	22.6%	25.6%
Post-secondary Education	72.3%	54.3%
Total	100%	100.0%

Gender Distribution

69.8% of the industry's workforce is composed of male workers

This percentage is 48.8% for the total Canadian workforce

Gender	% Share in Aerospace Industry	% Share in Total Workforce
% Male	69.8%	48.8%
% Female	30.2%	51.2%

Age Distribution

These numbers indicate that the workforce of the Aviation and Aerospace industry is slightly older than the average Canadian workforce.

In addition, the industry has half as many workers under 25 years old. In part due to the higher educational requirements of the skilled workforce.

Age distribution	% Share in the Aerospace Industry	% Share in Total Workforce
< 25 years old	6.5%	13.1%
Between 25 and 45 years old	47.9%	42.4%
> 45 years old	45.6%	44.4%
Total	100.0%	100.0%

Source: Statistics Canada, National Household Survey, 2011

Indigenous Distribution

Indigenous people are Canada's most underleveraged human resource asset

% Share in Aerospace Industry	% Share in Total Workforce
3%	4%

Immigration Status

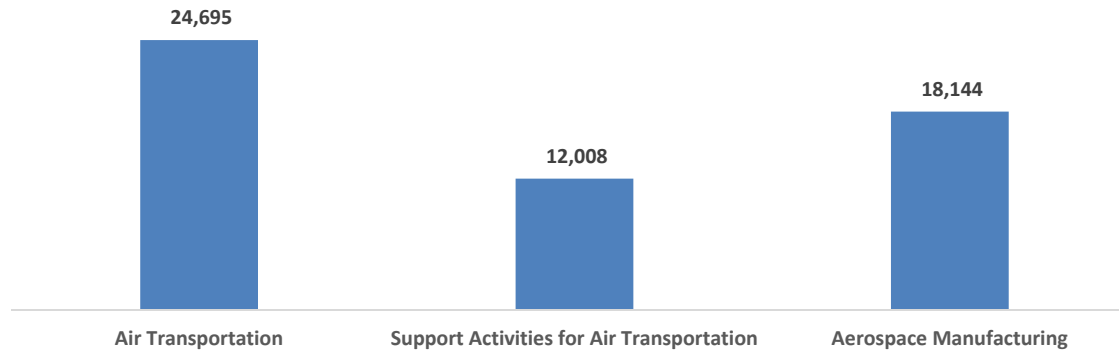
These numbers indicate that the workforce of the industry is composed of about the same share of immigrants as the overall Canadian workforce.

Immigration Status	% in the Aerospace Industry	% in the Total Workforce
Non-immigrants	72.9%	75.4%
Immigrants	25.9%	23.5%
Non-permanent residents	1.2%	1.2%
Total	100.0%	100.0%

Hiring Requirement by Industry, Canada, 2017-2025

Aviation and Aerospace industries need to hire a total of 55,000 workers from 2017 to 2025 across the three sub-sectors.

Hiring Requirement by Industry, 2017-2025



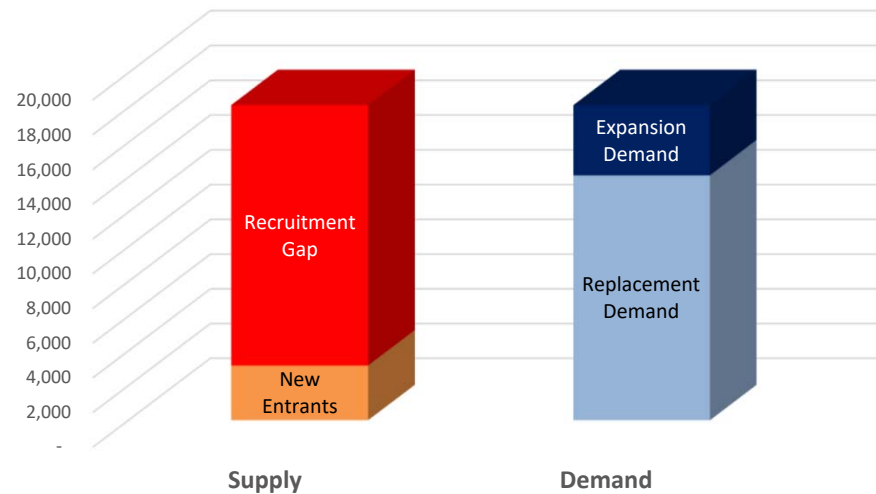
Industry	Total Hiring Requirement 2017 – 2025
Air Transportation	24,695
Support Activities for Air Transportation	12,008
Aerospace Manufacturing	18,144

Source: Prism Economics and Analysis estimates and forecast, 2017; CCAA Aviation & Aerospace LMI Outlook report, 2017

Hiring Requirement Aerospace Manufacturing, 2017-2025

- 78% of total hiring requirement in Aerospace Manufacturing is comprised of replacement demand
- 3,200 new entrants is the projected supply over this 9 year period to the labour force and is only 17% of the required workers until 2025
- 15,000 workers will be needed from other industries and jurisdictions (recruitment gap)

**Change in Aerospace Manufacturing Workforce
2017-2025 Hiring Requirement (18,144)**

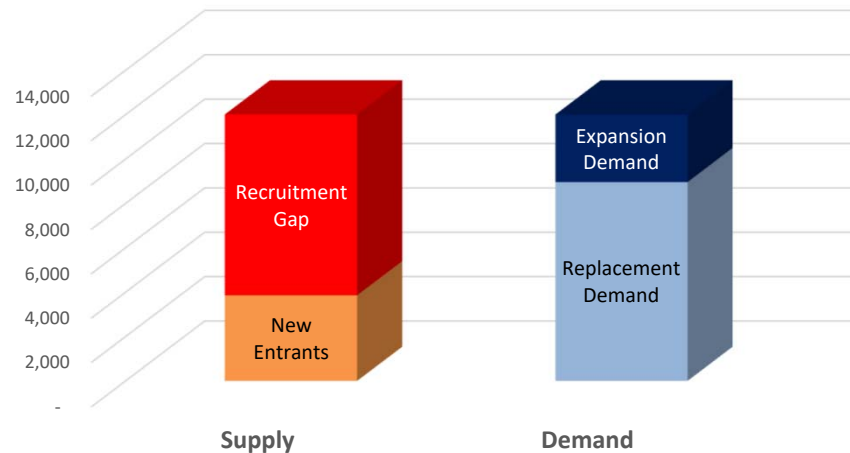


Hiring Requirement, Support Activities for Air Transportation, 2017-2025

- 75% of total hiring requirement in Support Activities for Air Transportation industry is comprised of replacement demand
- 3,900 new entrants is the projected supply over the 9 year period to the labour force make and is only up 32% of the required workers by 2025
- 8,200 workers will be needed from other industries and jurisdictions (recruitment gap)

Change in Support Activities for Air Transportation Workforce

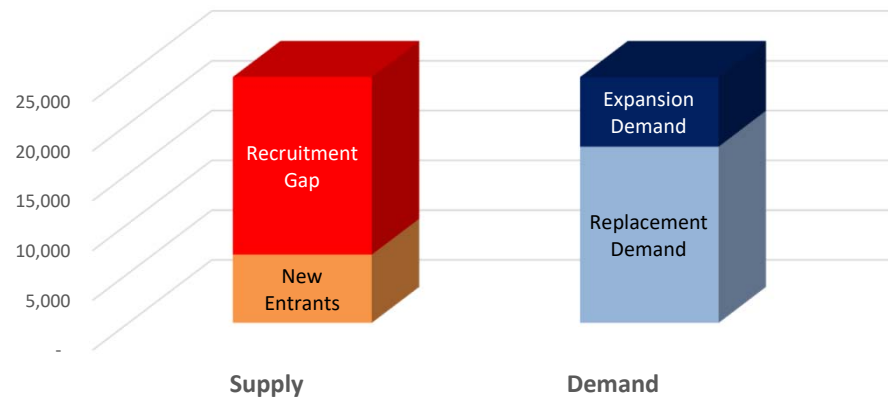
2017-2025 Hiring Requirement (12,008)



Hiring Requirement Air Transportation, 2017-2025

- 72% of total hiring requirement in Air Transportation industry is comprised of replacement demand
- 6,900 new entrants is the projected supply over this 9 years period to the labour force and is less than 30% of the required workers by 2025
- 17,800 workers will be needed from other industries and jurisdictions (recruitment gap)

**Change in Air Transportation Workforce
2017-2025 Hiring Requirement (24,695)**



Occupations most in demand in Aviation & Aerospace Industries, Canada

Hiring Requirements 2017 to 2025:

- 7,300 Air pilots, flight engineers and flying instructors
 - 5,300 Aircraft mechanics and aircraft inspectors
 - 4,500 Purser and flight attendants
 - 2,700 Aircraft assemblers and aircraft assembly inspectors
 - 2,000 Aircraft instrument, electrical and avionics mechanics, technicians and inspectors
 - 2,000 Air traffic controllers and related occupations
 - 1,900 Air transport ramp attendants
 - 1,600 Managers in transportation
 - 1,400 Machinists and machining and tooling inspectors
 - 1,300 Aerospace engineers
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Critical Shortages

Pilots:

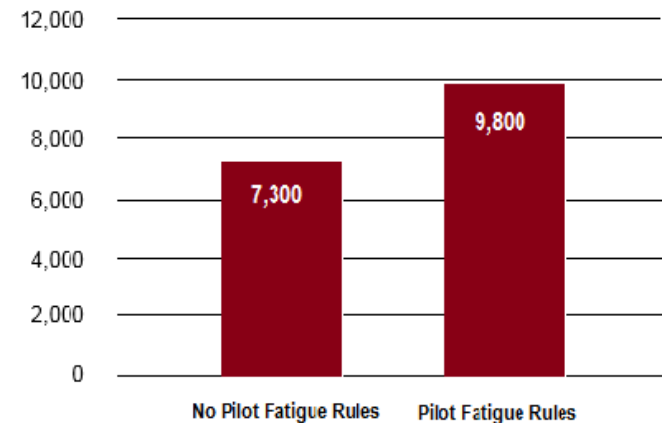
- 7,300 new pilots needed by 2025
- Less than 1200 new commercial pilot licenses each year
- 45% of these go to foreign students
- Approximately 70% go to work in the industry
- Shortage of close to 3,000 pilots by 2025
- 7% female participation

Aircraft Maintenance Engineers - Maintenance:

- 5,300 new AMEs needed by 2025
 - Approximately 600 Canadian graduates per year in Aircraft Maintenance
 - Approximately 77% go to work in the industry
 - Shortage of 1200 or more by 2025
 - 6% female participation
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Effect of Pilot Fatigue Rules on Hiring Requirement, 2017-2025

- Proposed federal regulations would cut the number of consecutive hours pilots are allowed to fly, increase the duration of mandatory rest time between flights, and reduce the total number of hours pilots can fly annually
- Key stakeholders and industry trade associations estimate that enforcement of proposed regulations would increase projected pilot hiring requirement over the next decade from **7,300** to **9,800**, a 26% increase



Aviation and Aerospace, College Graduates by Program, Canada

- Colleges with Aviation and Aerospace specific programs graduate approximately 1500 students per year
 - Aviation employs an estimated 77%* of Aviation and Aerospace new entrants;
approximately 1155 per year
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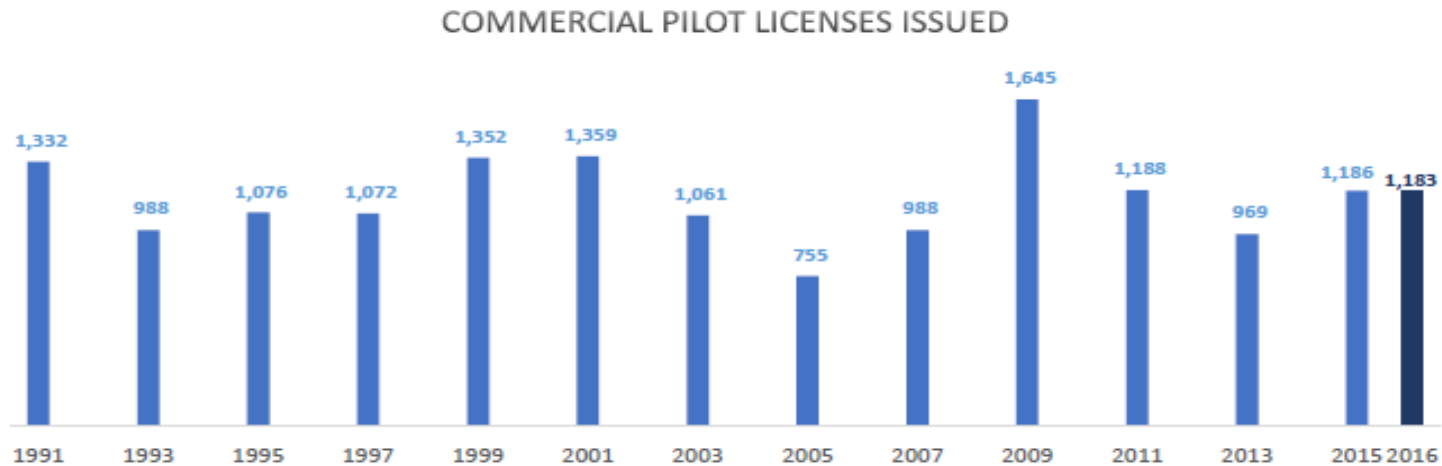
Aerospace Engineering, University Enrolments and Graduations, Canada

- More than 1,600 aerospace engineering students across all academic levels in 2015-16
- More than 300 graduates in the same year
- New enrolments have plateaued since peaking in 2007-08 – over the past seven academic years new enrolments have declined by an average of 2% annually
- Aerospace engineering graduates have totaled nearly 4,100 since 1995-96
- Female students make up 16% of total enrolment

	2015-16 Count
Total Enrolments	1,628
New Enrolments	484
Graduations	326

Flight Training Statistics, Canada

- The number of commercial pilot licenses issued per year peaked in 2009, reaching 1,645
- In 2016, less than 1,200 commercial pilot licenses were issued; a drop of 28% from the 2009 peak



Findings

- Looming retirements, replacement rate higher than growth rate
 - Companies need to have a balance of new and experienced workers to maintain workforce and be fully productive
 - Knowledge transfer methods, both formal and informal, are required
 - Difficult finding workers with enough experience and required skill set
 - Business models have changed - workers need to have more diverse skills
 - Soft skills and business skills are lacking
 - Specifically critical thinking, ability to make decisions, troubleshooting, eligible for security clearance
 - Some occupational shortages are not large employment numbers but critical work, such as NDT level 3.
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Findings

- Workforce is increasingly becoming more digital (big data, electronic work orders and online manuals)
 - Training does not keep up with the rate of emerging skills required for new equipment and technologies (3D printing, CNC, additive manufacturing, robotics)
 - Educators do not have access to newest technologies and priority equipment
 - Required training not available in all regions (aerospace engineers, composites, painters, structures)
 - Some training not available at all – stores, technical writing
 - Lack of practical training for Engineers
 - Lack of WIL for technicians and mechanics
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Findings

- Manufacturers need to incorporate lean processes to remain competitive
 - When companies need to increase or upskill workforce for a new contract it puts pressure on the HR departments
 - Industry is not tapping into underrepresented workforce such as females in STEM or indigenous persons
 - Generation differences
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Labour and Skill Shortages

Skilled Trades, Technicians, Mechanics, Production

- AMEs with enough experience
 - Avionics (airplanes are becoming an “ipad”)
 - Structures
 - “Good” welders with aerospace skill set
 - Machinists / CNC / CMM Programmers
 - Composites experience
 - NDT, Level 3
 - Electricians
 - Painters
 - Carpenters
 - Landing Gear Assembly
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Labour and Skill Shortages Pilots, Flight Operations

- Pilots with sufficient flight hours
 - Specialties - Long lining skills, Float planes, Mountain flight qualifications
 - Air Worthiness Inspectors
 - Customer services skills
 - Business acumen
 - Conflict resolution skills
 - Leadership
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CCAA PROJECTS

- National Labour Market Strategy
 - Student Work-Integrated Learning Program, SWILP
 - Multidisciplinary Technician, MDT
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National Labour Market Strategy Day

- National Industry Road Map
 - Outreach Committee
 - Female Participation
 - Indigenous Participation
 - Pilot shortages
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- Next day will be held Oct 3 2018, War Museum, Ottawa
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Student Work-Integrated Learning Program, SWILP

- Wage Subsidies to encourage employers to hire post secondary students – up to 1000 students in our industry over 4 years
 - Focus on occupations in science, technology, engineering, mathematics (STEM) and business
 - Employers offering quality “work-integrated learning” placements to PSE students will receive wage subsidies through CCAA
 - Co-ops, internships , field placements
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Student Work-Integrated Learning Program, SWILP

- Employers will receive wage subsidies of up to 50 percent of the students wages (up to a maximum of \$5,000 per placement)
 - Or up to 70 percent (up to a maximum of \$7,000 per placement) for first-year students and under-represented groups including, women in STEM, Indigenous students, persons with disabilities and recent immigrants.
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Multidisciplinary Technician, MDT

- Industry said it needs a labour force which is more multidisciplinary - competent in more than one trade
 - Development of a new curriculum which alternates school and WIL
 - To include Aircraft Maintenance Technician, Avionics and Interiors
 - Students will have more hands-on experience so they are productive in the workforce sooner
 - Students will receive practical work experience on real world equipment, incorporating the latest technology and Original Equipment Manufacturer (OEM) technical platforms
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Multidisciplinary Technician, MDT

- 9 consortium stakeholders are involved in the design of the program
 - Work terms include structured on-the-job training, job shadowing, a mentoring program, online training as well as technical, business, leadership and entrepreneurial skills training
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Possible SWILP Modification

- SWILP does not currently support flight training, however, the Air Transport Association of Canada (ATAC) has developed a proposal with CCAA
 - This would make funding available to aviation students wishing to complete an instructor or float rating.
 - The more support we can demonstrate from industry and students for such a proposal the more likely it is to be given consideration by ESDC.
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Thank You

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