



ASSOCIATION OF CONSULTING
ENGINEERING COMPANIES | SK



2016 Consulting Engineering Industry Capacity Survey

ACEC-SK Human Resources Committee
Released Summer 2017

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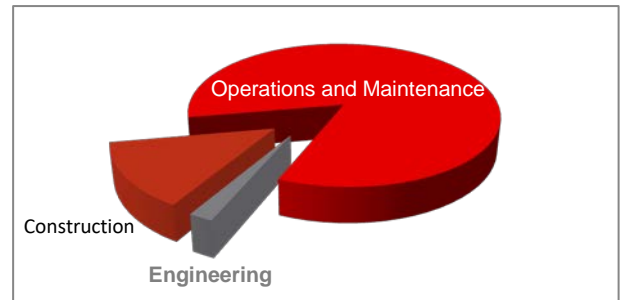
EXECUTIVE SUMMARY –

CONSULTING ENGINEERING INDUSTRY DRIVES ECONOMIC GROWTH

The consulting engineering industry has a huge impact on the economy. One long-tenured Saskatchewan consulting engineer is fond of saying it is “an engineered economy” because professionals in this industry are not only technical experts, but capital investment experts. Engineers influence capital investment in the province, and capital investment drives economic growth.

Their design specifications greatly influence how long the capital asset being constructed will last and how cost-effectively they will operate. Although the engineering fees for capital projects are usually the smallest cost, engineering designs have the ability to create the greatest savings over the life of these capital investments. While many widely recognize the construction industry’s influence on economic growth, many do not realize just how much engineering influences construction, and as a consequence how much engineering influences the economy.

Wise capital investment includes investing in engineering expertise. This is why gaps in consulting engineering industry experience and knowledge can negatively impact provincial capital investment; the need to understand where these gaps exist ultimately motivated this survey.



This survey created a baseline to describe the industry’s current state, and focused on:

- Geographic areas of practice
- Consulting engineering company firm size
- Percentage of professionals to technologists
- Experience levels
- Engineering discipline gaps
- Capacity to increase activity in response to demand
- Percentage of talent imported to the province
- Percentage of talent exported from the province

Survey results established that the vast majority of those practicing consulting engineering in the province are locally-based. It reinforced there is a broad range of company size, from very small one-person operations right up to multi-national firms employing over 300 people. It indicated which engineering disciplines have gaps, and which ones engineering companies are considering growing.

More telling, perhaps, was the limited amount of talent being imported into the province, and the amount being exported at the time of the survey. This reinforced that considerable industry knowledge and experience has been built up in this province, but some of that talent was starting to leave because supply was greater than demand.

Investing in consulting engineering knowledge and expertise will sustain consulting engineering industry’s capacity, ultimately leading to stronger provincial capital investment decisions.

1.0 INTRODUCTION

1.1 ABOUT ASSOCIATION OF CONSULTING ENGINEERING COMPANIES – SASKATCHEWAN (ACEC-SK)

The Association of Consulting Engineering Companies – Saskatchewan (ACEC-SK) is a not-for-profit corporation acting as the business voice of consulting engineering and geoscience firms in Saskatchewan. Its corporate member firms deliver professional services locally, nationally, and worldwide to both private and public sector clients.

ACEC-SK consulting engineers and geoscience member firms offer experienced and licensed intellectual resources hired by clients to assist with a project or a problem requiring external advice, technical assistance, or service.

Member firms range in size from sole proprietors to multi-national companies. In 2016 its 64 corporate members employed approximately 2,000 individuals including professional engineers and geoscientists, technologists, other technical staff as well as support staff.

Consulting engineers and geoscientists serve as trusted advisors to society on the planning, development and management of our natural and built environment. The industry contributes as much as \$2 billion annually directly and indirectly to the Saskatchewan economy.

1.2 CONTEXT

Prior to this report, ACEC-SK did not formally collect labour market information about the consulting engineering and geoscience industry. The motivation to undertake this formal industry capacity survey arose from being regularly approached by various stakeholders to provide detailed information about the industry's ability to respond to capital project demand.

ACEC-SK commissioned a study to establish labour market baseline data to help determine the factors and drivers of change, growth and retraction within the consulting engineering and geoscience industry.

In the past the vast majority of available industry capacity information was only anecdotal in nature, not based on aggregate data that could be analyzed objectively. This was because industry felt it could not accurately respond to capacity inquiries in the absence of clearly defined future client capital plans/budgets. Without having an appreciation of the volume of future work, the consulting engineering industry's standard answer to this question had been that it always has capacity to respond to client demand. As a result, both client and consultant have each contributed to the lack of formal consulting engineering industry capacity information.



Because the industry recognized the consequences of this knowledge gap, ACEC-SK commissioned a study to establish labour market baseline data to help determine the factors and drivers of change, growth and retraction within the consulting engineering and geoscience industry.

1.3 RESEARCH OBJECTIVES



The primary objective of the 2016 Consulting Engineering Industry Capacity Survey was to produce an estimate of the current total number and types of consulting engineering and geoscience personnel in Saskatchewan. This serves as a baseline against which to measure future capacity, which in turn will afford greater opportunities to monitor trends going forward. This reinforces the survey's secondary objective which is to support the industry's ability to predict the future capacity of the Saskatchewan consulting engineering and geoscience labour force. The results will, in turn, provide employers, clients, stakeholders, and government with timely information about the capacity of Saskatchewan's consulting engineering and geoscience industry.

The report contains statistics and commentary useful for policy development to sustain a healthy consulting engineering industry. Findings have implications for developing a proactive policy for the

consulting engineering industry's human resource development, and addressing current and future potential labour supply and demand gaps. It may also be used to inform government policy decisions about the direction of future consulting engineering employment, and provide insight on the impacts this industry has on the economy as a whole. The survey also provides direction to government regarding what areas of specialization consulting engineering employment are of primary importance to support and, therefore, which policies may be implemented to ensure the healthy future development of this industry in Saskatchewan which will aid in provincial economic growth.

1.4 SUMMARY OF METHODOLOGY

The 2016 Industry Capacity Survey consisted of 30 questions distributed to ACEC-SK's member firms. In total, 50% of the questionnaires were completed by business owners and HR/payroll professionals from a broad spectrum of consulting engineering firm types across Saskatchewan. The survey posed specific questions to isolate what geographical locations firms focus their efforts, and then to break down the types of disciplines where there is anticipated to be gaps in the future. Results extrapolated from the data were also used to estimate the experience levels of consulting engineering employees and professionals in Saskatchewan. More detailed questions then probed about companies' perception about future capacity in the near and medium term. Results extrapolated from this data were used to estimate the future experience levels of consulting engineering employees and professionals anticipated in Saskatchewan. As well, data provided insight on workforce demographics and human resources factors that impact the future of various sector.

Association tools were utilized to assist with identifying engineering disciplines individuals are performing within consulting engineering firms. Individuals within consulting engineers are usually employed within a specific discipline, which informs industry capacity for that particular discipline. See Figure 1 below for a complete and substantive list of consulting engineering fields of specialization.

Figure 1. SASKATCHEWAN CONSULTING ENGINEERING FIELDS OF SPECIALIZATION

(Press Ctrl + C for Field links on the ACEC-SK website)

Aerospace

Agriculture

Agricultural Engineering / Agrology | Agricultural Environment Organic Waste disposal in Rural Areas | Drainage Studies / Surveys | Draining and Irrigation Systems / Networks | Farm Buildings | Farm Machinery and Equipment | Farmland Resources: Surveys and Improvement Works | Food Processing and Storage | Grains and Feeds: Drying, Cleaning, Handling, Processing and Storage | Irrigation | Land Drainage | Nutrient Management | Rural Planning and Development | Water and Soil Conservation Engineering

Building Science

Acoustics | Architecture | Capital Planning | Ergonomics | Fire Protection / Prevention | Indoor Air Quality | Inspections / Investigations | LEED - Leadership in Energy and Environmental Design | Preliminary / Final Design | Repair / Restoration | Residential | Roofing and Waterproofing | Technical Audits | Walls and Cladding | Windows

Chemical Engineering

Desalination | Food Processing | Plastics | Process Design | Synthetic Fibres

Cold Climate Engineering

Building Design for Arctic Conditions | Diesel Power Generation | Ice Core Dams | Ice Road Design | Permafrost Investigations | Petroleum, Oil and Lubricant Storage and Handling | Thermosyphons

Communications / Telecommunications

AM/FM Broadcasting | Data Transmission Systems | Fibre Optics | Program Production Facilities | Terrestrial and Satellite Links | TV and CATV | Wireless Systems

Computer Science

Client / Server | Computational Mechanics | Controls | Database Management | Ergonomics | Internet / Intranet | Process Automation | Robotics | Software Development

Electrical

Alarm and Security Systems | Building Systems | Energy Conservation | Illumination and Lighting | Motors and Generators | Power Transmission and Distribution | Residential

Energy

Biomass / Wood | Co-Generation | Coal Processing / Transportation | District Heating and Co-Generation | Electric Power Generation - Hydroelectric | Electric Power Generation - Nuclear | Electric Power Generation - Thermal | Electric Power Systems Analysis | Energy Conservation | Oil and Gas Pipelines | Oil and Gas Production / Storage / Distribution | Oil and Gas Refineries / Processing Plants | Solar Energy | Steam Power Generation | Wind Energy

Energy Geoscience

Coal Bed Methane | Coal Exploration / Mining | Energy Reserves | Petroleum Development | Petroleum Exploration

Environmental

Air Quality Management | Environmental Assessments | Environmental Litigation Support | Environmental Site Assessments and Audits | Groundwater Resources / Hydrogeology | Industrial Hygiene and Safety | Industrial Wastewater Treatment | Laboratory and Treatability Studies | LEED - Leadership in Energy and Environmental Design | Mould Studies | Noise and Vibration | Physical Environmental Mapping and Analysis | Record of Site Condition | Risk Assessment | Solid / Hazardous Waste Management | Surface Water Resources | Underground Storage Tank Management

Environmental Geoscience

Hydrogeology and Groundwater | Terrain Analysis / Remote Sensing | Waste Management / Mitigation / Disposal

Fisheries

Fish By-products: Processing | Fish Processing / Storage | Fishery Resources: Evaluation, Development, Operations, Aquaculture | Fishing Vessels Gear / Equipment | Marine Biology and Oceanography | Maritime / Harbour Engineering, Trans-shipment Equipment | Monitoring, Control and Surveillance (MCS) | Naval Architecture and Boat Construction | Remote Sensing

Forensic

Accident Reconstruction | Cladding Failures | Electrical / Mechanical Failures | Fire and Explosions | Investigation and Settlement of Claims | Process Support Facilities | Product Failures and Liability | Structural Failures | Wind and Water Damage

Forestry

Building Materials: Plywood, Lumber, Manufacturing, etc. | Forest Harvesting | Forestry | Forestry Engineering | Pulp / Paper Plants, Products | Pulp, Paper and Fiber Board | Timber Engineering | Timber Grading, Wood Species Identification, Wood Damage Assessment

Geophysics

Mining Geophysics | Seismic Acquisition / Analysis

Geotechnical

Aggregate Exploration and Evaluation | Earth Structures | Foundations | Geohazard Mapping | Laboratory Testing | Site Investigations | Soil and Rock Mechanics | Soil Stabilization

Industrial

Ergonomics | Hydraulic Engineering | Machine Design / Analysis | Manufacturing Facilities | Materials Handling | Materials Storage | Plant Maintenance | Product and Process Design | Prototyping and Product Development | Time Motion Studies | Transportation / Automotive Equipment

Marine and Coastal

Erosion Protection | Marinas | Ports and Terminals | Shore Erosion Processes and Assessment | Underwater Surveys | Waterfront Planning

Materials

Analysis | Corrosion Control and Remediation | Design and Selection | Quality Issues | Specifications and Manuals | Testing and Certification | Welding

Mechanical

Computational Fluid Dynamics | Computer Aided Engineering | Cranes and Derricks | Finite Element Analysis | Fire Protection Systems | Heating, Ventilation, A/C | Machine Design | Plumbing and Piping | Refrigeration | Residential | Software development

Mineral Geoscience

Mineral Exploration | Mineral Reserves | Mining Geology | Rock Mechanics

Mining Engineering

Blasting Control | Iron and Steel Works - Rolling / Casting / Forging / etc. | Metallurgy Extractive - Ferrous Metals | Metallurgy Extractive - Non-Ferrous Metals | Metals / Minerals / Ore Dressing | Non-Ferrous Metals - Fabricating / Rolling / Forging / Casting / Extruding / etc. | Open Pit / Underground Mining

Municipal

Infrastructure Rehabilitation | Residuals Management | Roads and Streets | Stormwater Management | Wastewater Collection and Treatment | Wastewater Management | Water Supply and Treatment

Occupational Health and Safety

Area Classifications - Electrical | Area Classifications - Hazardous | Area Classifications - Industrial | Pre-start Health and Safety Reviews

Petroleum Engineering

Acquisitions and Divestitures | Evaluations | Expert Witness | Exploitation | Feasibility Studies | Reservoir Engineering | Well Test Analysis

Planning

Drainage Studies | Industrial Parks | Land Use | Site Plans | Subdivision Plans | Urban and Rural Design

Pressure Vessels

Design Modifications | Process Piping Design

Project Management

Construction Management | Construction Quality Control | Contract Administration | Management of Design | Procurement Management | Project Control and Risk Management | Related Management Services | Value Engineering

Research

Feasibility Studies | Technology Assessment

Structural - Buildings

Commercial | Foundations | Highrise | Industrial | Inspections and Investigations | Institutional | Lowrise | Parking Facilities | Residential | Restoration and Repair | Seismic Retrofit

Structural - Other

Bridges | Bunkers and Silos | Dams and Locks | Nuclear | Tanks and Shells | Towers | Tunnels

Surveying and Mapping

Aerial Photography: Photogrammetry / Photo Interpretation / Cartography | Construction Layout Surveys | Geographic Information Systems | Land Surveying / Cadaster | Remote Sensing / Satellite Data Interpretation / Imagery | Resource Surveys, Exploration and Planning | Topographic Surveys

Temporary Works

Excavation Enclosures | Formwork | Lifting and Moving | Scaffolding | Structural Shoring

Transportation

Airports | Highway and Road Safety | Intelligent Transportation Systems | Long Distance Rail | Pavement Design | Pavement Management Services | Ports and Harbours | Roads and Highways | Terminals and Service Centres | Traffic Engineering and Control | Transportation Planning | Urban Public Transit



2.0 RESULTS

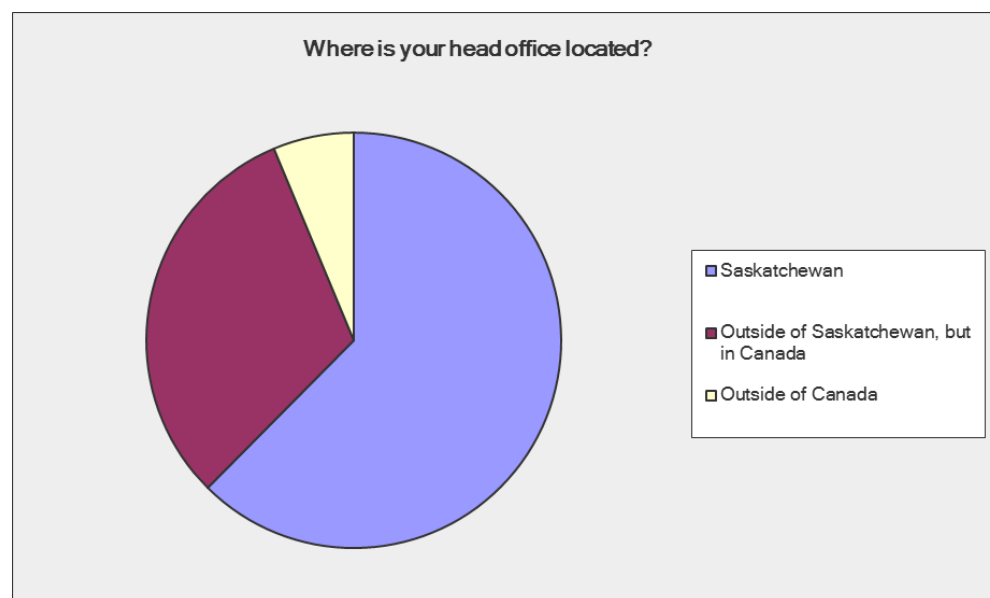
The raw survey results are presented in this section with no analyses, interpretation, or conclusions. These will be articulated in Section 3 of this report. The labour market information is current as of April, 2016 and the data is reflective of the market as of this date.

2.1 PARTICIPATION RATE

A total of 32 out of 64 association member firms responded to the survey which is a solid 50 per cent response rate. The responses embody approximately 1000 individuals and are deemed to be representative of the industry based on a number of factors, including validation of some responses relative to independent questions posed to members throughout the year. Although the results were blind, the list of respondent companies validated participation of a good cross-section of firm size.

2.2 HEAD OFFICE LOCATION OF SASKATCHEWAN CONSULTING ENGINEERING FIRMS

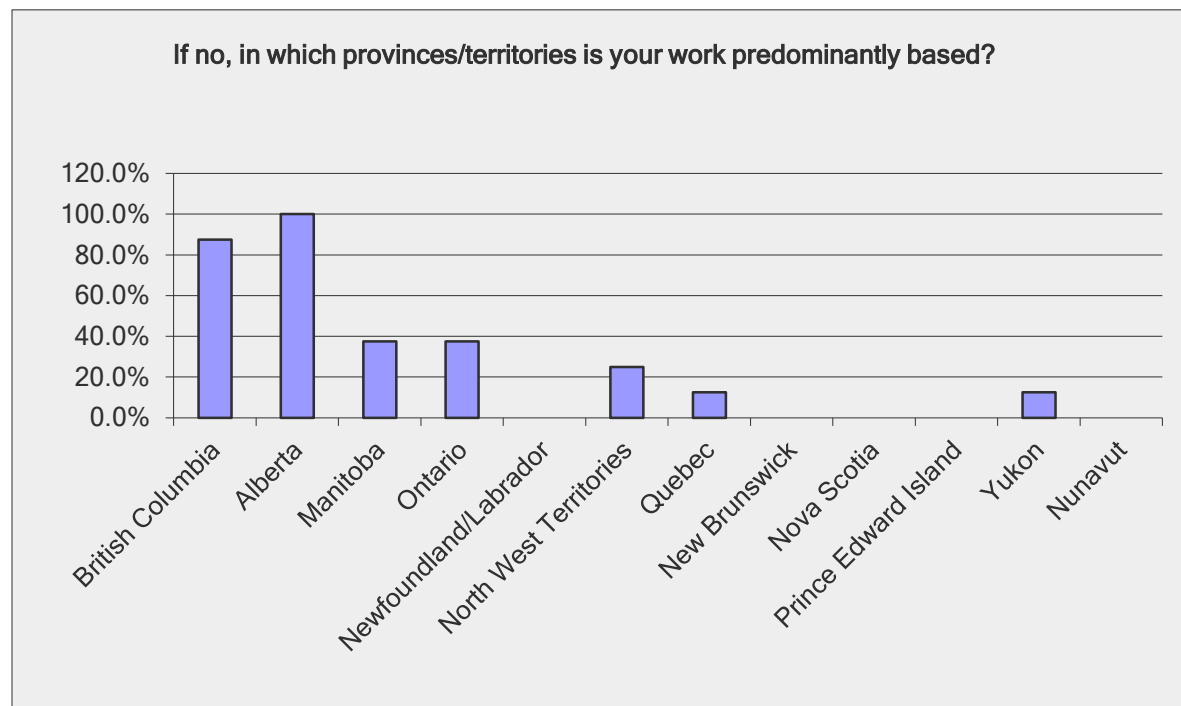
| Where is your head office located? | |
|--|------------------|
| Answer Options | Response Percent |
| Saskatchewan | 62.5% |
| Outside of Saskatchewan, but in Canada | 31.3% |
| Outside of Canada | 6.3% |



2.3 GEOGRAPHICAL LOCATIONS WHERE FIRMS ARE COMPLETING WORK

| Is your firm's work based predominantly in Saskatchewan? | |
|--|------------------|
| Answer Options | Response Percent |
| Yes | 75.0% |
| No | 25.0% |

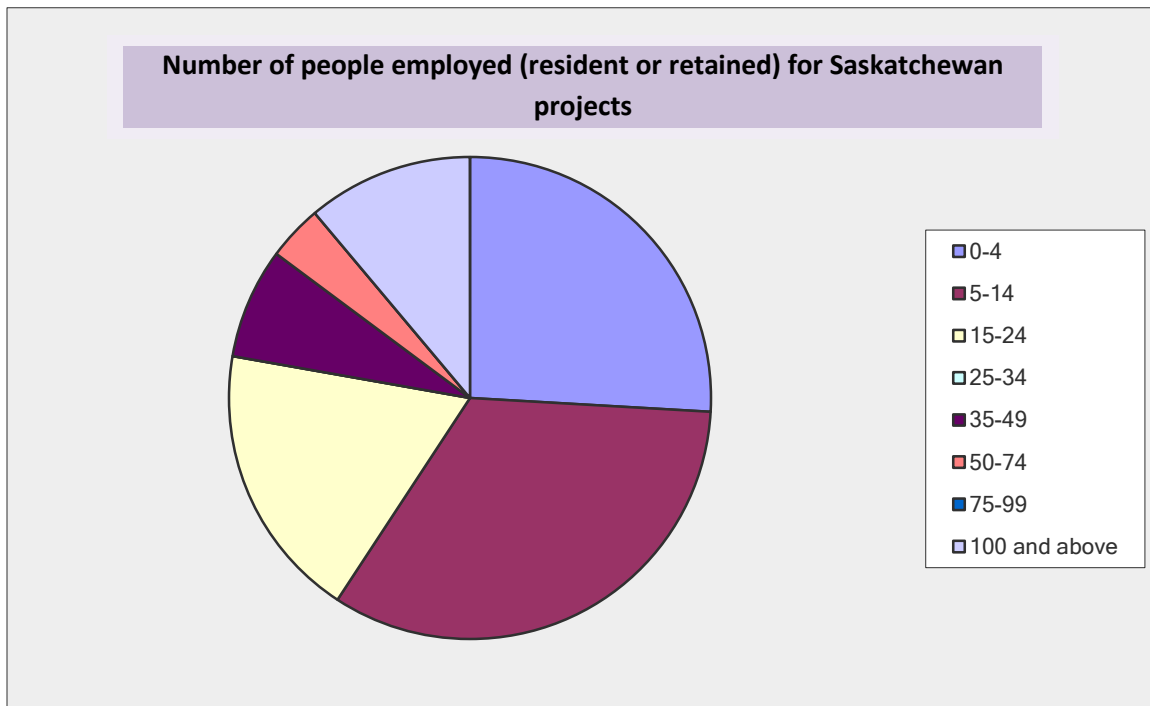
| If no, in which provinces/territories is your work predominantly based? | |
|---|------------------|
| Answer Options | Response Percent |
| British Columbia | 87.5% |
| Alberta | 100.0% |
| Manitoba | 37.5% |
| Ontario | 37.5% |
| Newfoundland/Labrador | 0.0% |
| North West Territories | 25.0% |
| Quebec | 12.5% |
| New Brunswick | 0.0% |
| Nova Scotia | 0.0% |
| Prince Edward Island | 0.0% |
| Yukon | 12.5% |
| Nunavut | 0.0% |



2.4 SIZE (NUMBER OF EMPLOYEES) OF CONSULTING ENGINEERING FIRMS IN SASKATCHEWAN

How many people does your consulting engineering/geoscience firm employ as of the date of this survey in Saskatchewan? (Note: for the purposes of this survey, the definition of “employ” refers to all personnel engaged for Saskatchewan projects, including both “resident” and “retained” employees)

| Answer Options | Response Percent |
|----------------|------------------|
| 0-4 | 25.9% |
| 5-14 | 33.3% |
| 15-24 | 18.5% |
| 25-34 | 0.0% |
| 35-49 | 7.4% |
| 50-74 | 3.7% |
| 75-99 | 0.0% |
| 100 and above | 11.1% |

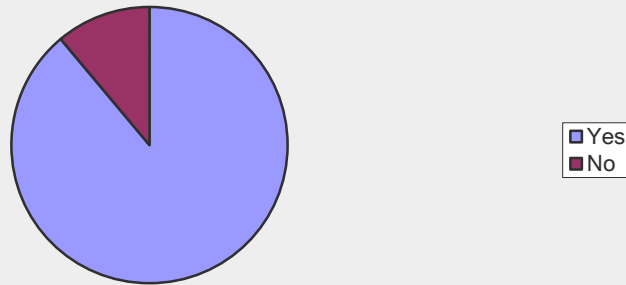


2.5 CAPACITY TO INCREASE VOLUME OF ACTIVITY IN RESPONSE TO DEMAND

If the demand for your firm's services increased, could you increase the volume of activity with your present human resources in the short term?

| Answer Options | Response Percent |
|----------------|------------------|
| Yes | 88.9% |
| No | 11.1% |

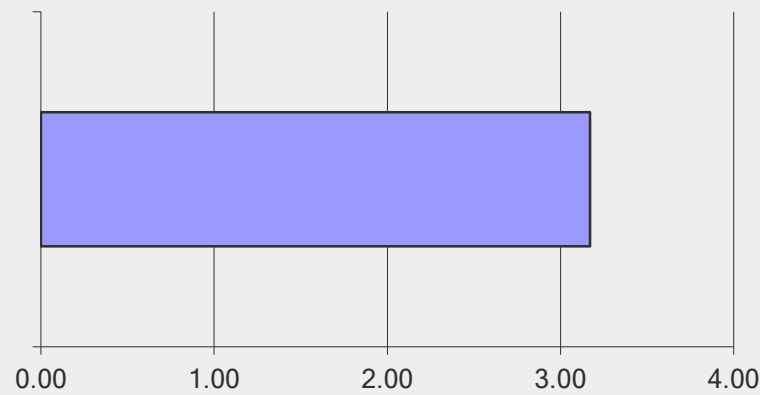
If the demand for your firm's services increased, could you increase the volume of activity with your present human resources in the short term?



If so, by how much?

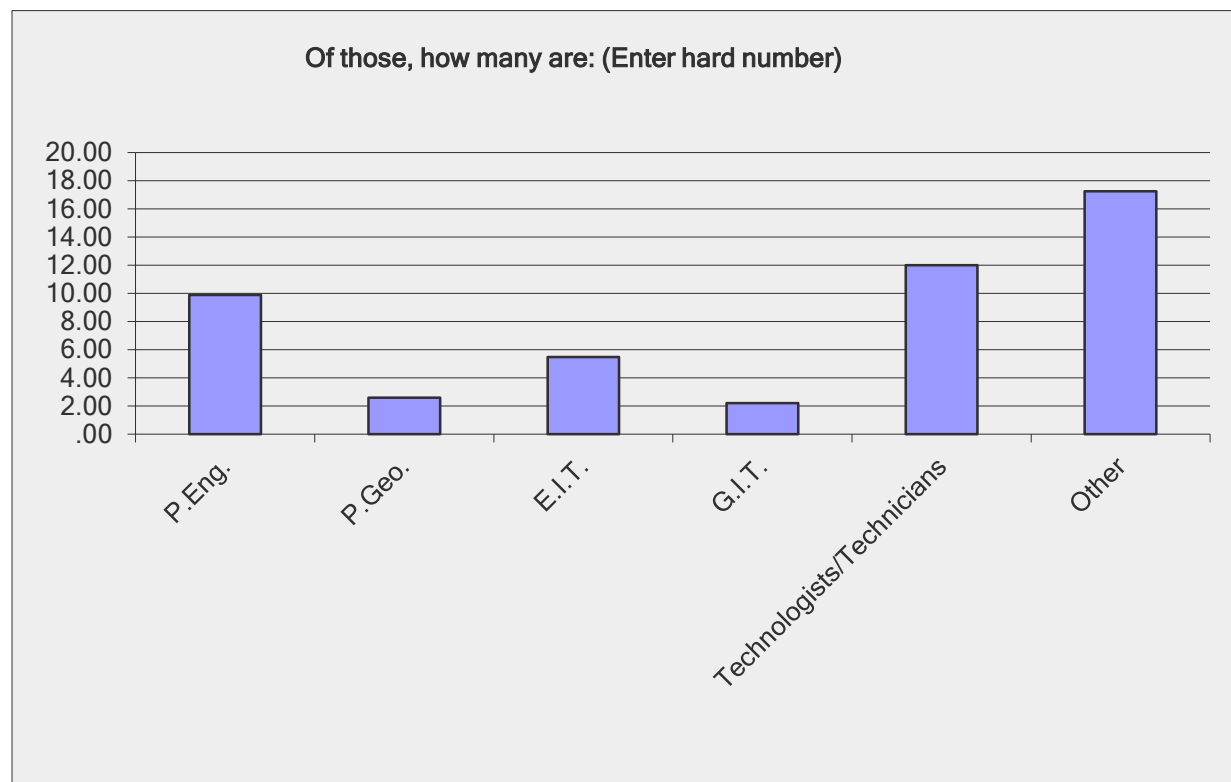
| Answer Options | 0-10% | 11-20% | 21-30% | 31-40% | 41-50% | 51-60% | 61-70% | 71-80% | 81-90% | 91-100% | |
|----------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|---------|--|
| | 1 | 7 | 11 | 2 | 1 | 0 | 1 | 1 | 0 | 0 | |

If so, by how much?



2.6 PERCENTAGE BREAK DOWN OF ACCREDITED PROFESSIONALS/PROFESSIONALS-IN-TRAINING/TECHNOLOGISTS/TECHNICIANS

| Of those, how many are: (Enter hard number) | |
|---|----------------|
| Answer Options | Response Total |
| P.Eng. | 267 |
| P.Geo. | 13 |
| E.I.T. | 82 |
| G.I.T. | 11 |
| Technologists/Technicians | 228 |
| Other | 293 |



2.7 CONSULTING ENGINEERING INDUSTRY'S PERSONNEL EXPERIENCE LEVELS & GAPS

A sample of the data is provided here for demonstration purposes:

Approximately what percentage of each category of employee falls into each years of experience category? (Answers should total 100% for each classification, if there are no employees in that classification a 0 value will be accepted)

Junior Level = 1-5 years of experience

| Answer Options | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
|---------------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Engineer/Geoscientist | 3 | 2 | 6 | 1 | 3 | 2 | 2 | 0 | 0 | 0 | 1 |
| Technologists/Technicians | 2 | 1 | 3 | 1 | 2 | 3 | 1 | 1 | 1 | 0 | 0 |
| Other technical staff | 3 | 1 | 2 | 2 | 1 | 2 | 1 | 0 | 0 | 0 | 0 |
| Support staff | 4 | 0 | 3 | 4 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |

Mid Level = 6-15 years of experience

| Answer Options | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
|---------------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Engineer/Geoscientist | 0 | 2 | 2 | 7 | 0 | 6 | 2 | 0 | 1 | 0 | 1 |
| Technologists/Technicians | 1 | 3 | 2 | 2 | 5 | 2 | 1 | 0 | 0 | 0 | 3 |
| Other technical staff | 4 | 0 | 1 | 1 | 1 | 3 | 2 | 0 | 0 | 0 | 2 |
| Support staff | 3 | 2 | 0 | 3 | 1 | 1 | 2 | 0 | 1 | 0 | 4 |

Senior Level = Over 15 years of experience

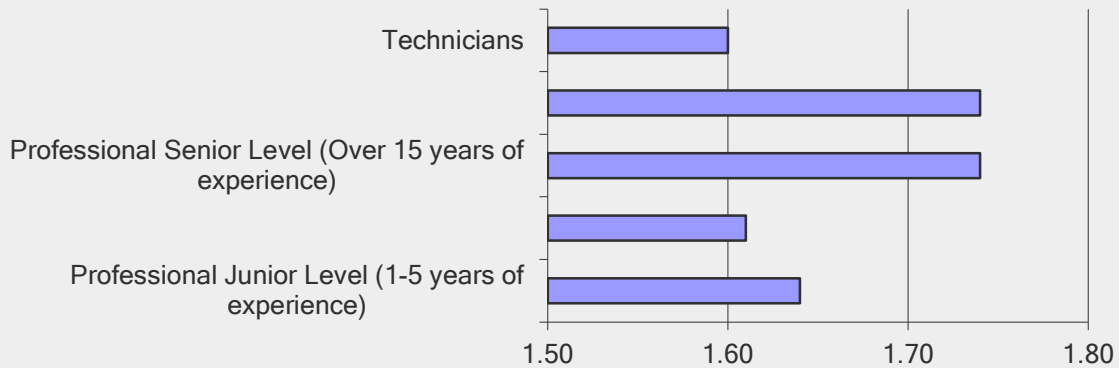
| Answer Options | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
|---------------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Engineer/Geoscientist | 0 | 3 | 4 | 6 | 2 | 1 | 2 | 1 | 0 | 0 | 4 |
| Technologists/Technicians | 3 | 3 | 3 | 2 | 1 | 3 | 1 | 0 | 1 | 0 | 1 |
| Other technical staff | 4 | 3 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 1 |
| Support staff | 5 | 1 | 0 | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 1 |



Do you currently have a significant skill gap at any of the following experience levels? (For the purpose of this survey, 'significant' will be considered a skills gap above 20% in each area)

| Answer Options | Yes | No | Rating Average |
|---|-----|----|----------------|
| Professional Junior Level (1-5 years of experience) | 8 | 14 | 1.64 |
| Professional Mid-Level (6-15 years of experience) | 9 | 14 | 1.61 |
| Professional Senior Level (Over 15 years of experience) | 6 | 17 | 1.74 |
| Management | 5 | 14 | 1.74 |

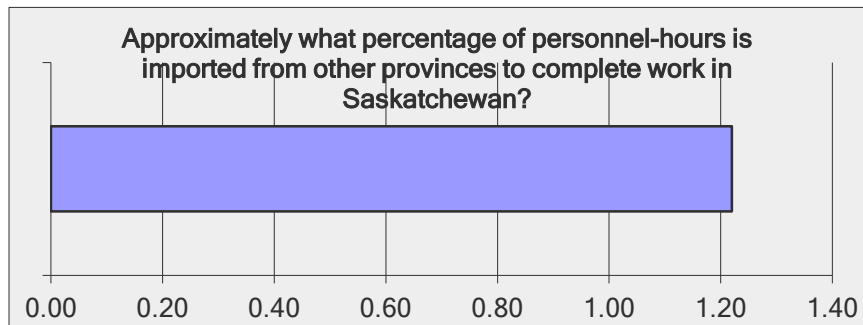
Do you currently have a significant skill gap at any of the following experience levels? (For the purpose of this survey, 'significant' will be considered a skills gap above 20% in each area)



2.8 PERSONNEL HOURS **IMPORTED** FROM OTHER PROVINCES AND RELATIVE EXPERIENCE LEVELS

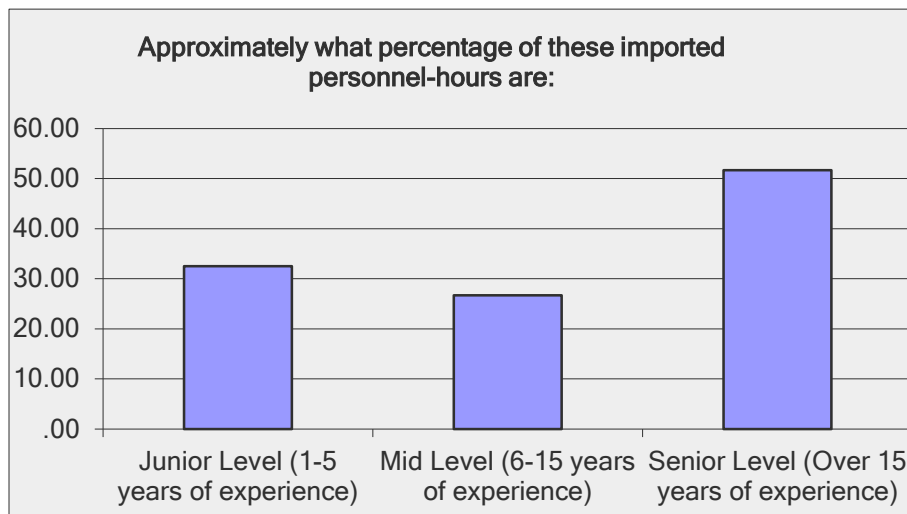
Approximately what percentage of personnel-hours is imported from other provinces to complete work in Saskatchewan?

| Answer Options | 0-10% | 11-25% | 26-50% | 51-75% | 76-100% |
|----------------|-------|--------|--------|--------|---------|
| | 24 | 2 | 0 | 0 | 1 |



Approximately what percentage of these imported personnel-hours are:

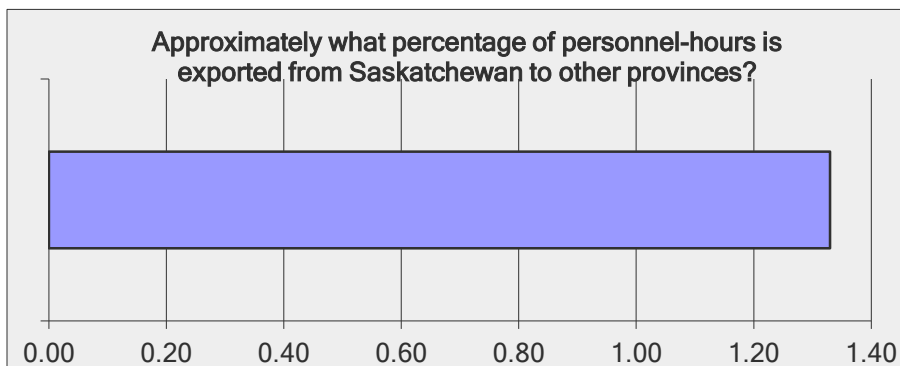
| Answer Options | Response Average |
|--|------------------|
| Junior Level (1-5 years of experience) | 32.50 |
| Mid Level (6-15 years of experience) | 26.67 |
| Senior Level (Over 15 years of experience) | 51.67 |



2.9 PERSONNEL HOURS **EXPORTED** FROM SASKATCHEWAN TO OTHER PROVINCES AND RELATIVE EXPERIENCE LEVELS

Approximately what percentage of personnel-hours is exported from Saskatchewan to other provinces?

| Answer Options | 0-10% | 11-25% | 26-50% | 51-75% | 76-100% | Rating Average |
|----------------|-------|--------|--------|--------|---------|----------------|
| | 20 | 5 | 2 | 0 | 0 | 1.33 |

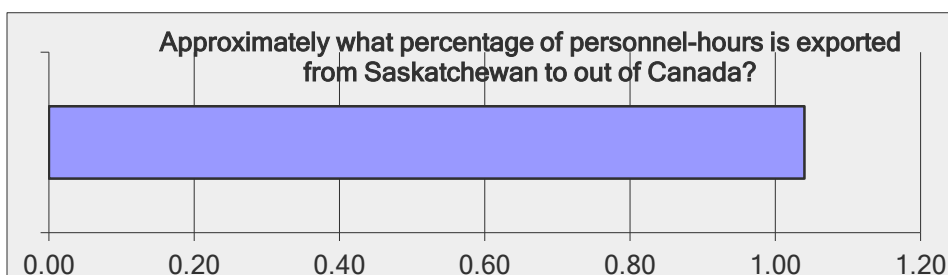


Approximately what percentage of these exported personnel-hours are:

| Answer Options | Response Average | Response Total |
|--|------------------|----------------|
| Junior Level (1-5 years of experience) | 20.29 | 142 |
| Mid Level (6-15 years of experience) | 27.57 | 193 |
| Senior Level (Over 15 years of experience) | 52.14 | 365 |

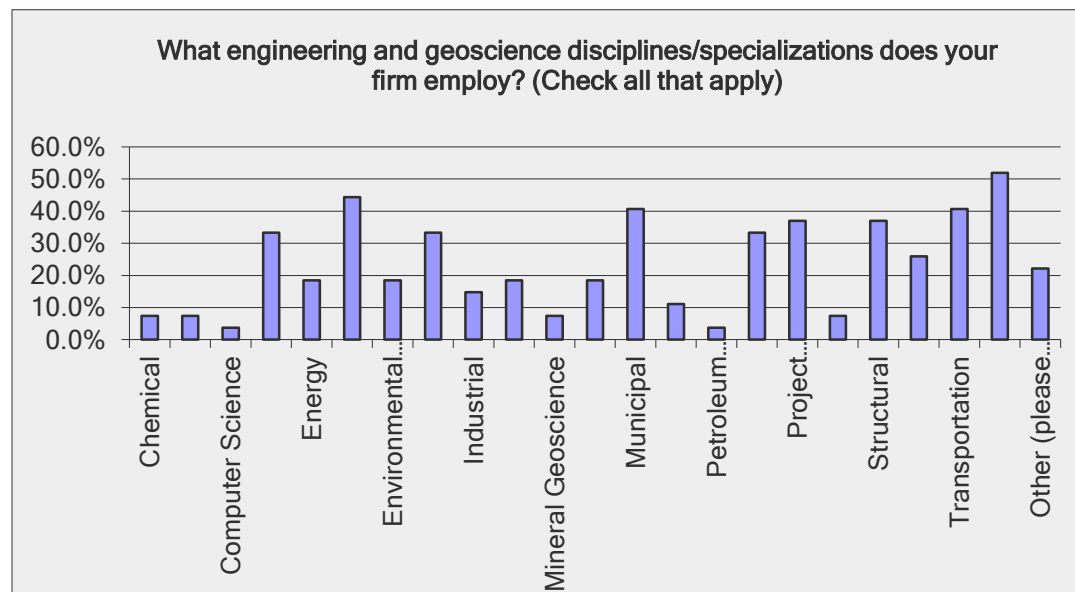
Approximately what percentage of personnel-hours is exported from Saskatchewan to out of Canada?

| Answer Options | 0-10% | 11-25% | 26-50% | 51-75% | 76-100% | Rating Average |
|----------------|-------|--------|--------|--------|---------|----------------|
| | 26 | 1 | 0 | 0 | 0 | 1.04 |



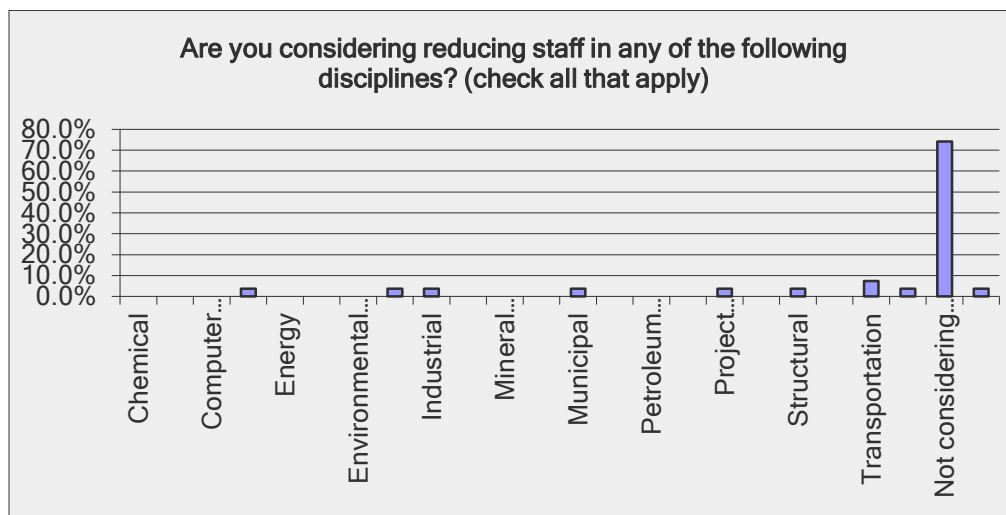
2.10 ENGINEERING DISCIPLINES CURRENTLY EMPLOYED BY SASKATCHEWAN CONSULTING ENGINEERING FIRMS

| What engineering and geoscience disciplines/specializations does your firm employ? (Check all that apply) | |
|---|------------------|
| Answer Options | Response Percent |
| Chemical | 7.4% |
| Communications/Telecommunications | 7.4% |
| Computer Science | 3.7% |
| Electrical | 33.3% |
| Energy | 18.5% |
| Environmental | 44.4% |
| Environmental Geoscience | 18.5% |
| Geotechnical | 33.3% |
| Industrial | 14.8% |
| Mechanical | 18.5% |
| Mineral Geoscience | 7.4% |
| Mining Engineering | 18.5% |
| Municipal | 40.7% |
| Occupational Health and Safety | 11.1% |
| Petroleum Engineering | 3.7% |
| Planning | 33.3% |
| Project Management | 37.0% |
| Research | 7.4% |
| Structural | 37.0% |
| Geomatics | 25.9% |
| Transportation | 40.7% |
| Water Resources | 51.9% |
| Other (please specify) | 22.2% |



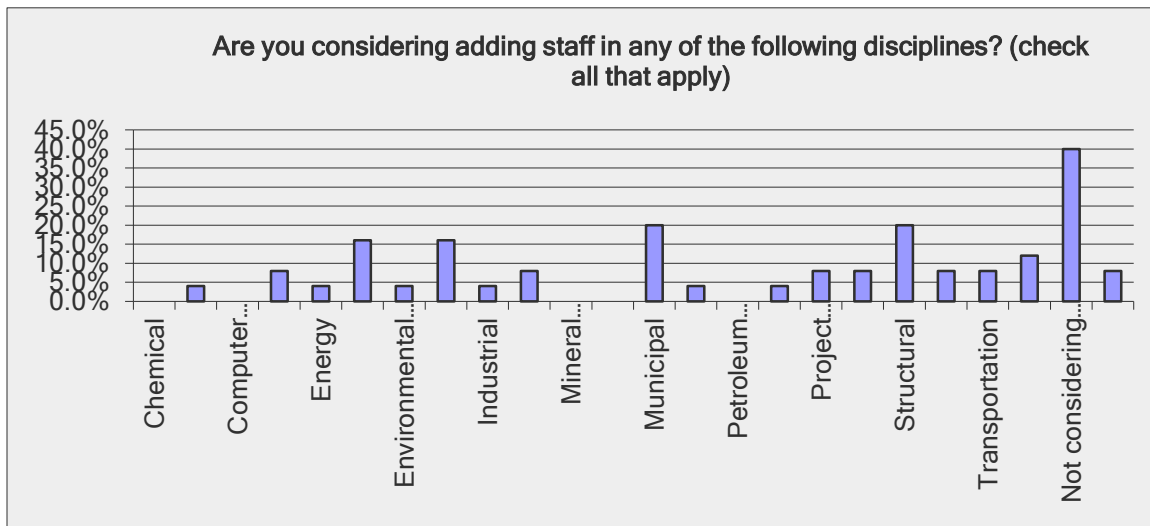
2.11 ANTICIPATED **REDUCTION** IN STAFF BY DISCIPLINE

| Are you considering reducing staff in any of the following disciplines? (check all that apply) | |
|--|------------------|
| Answer Options | Response Percent |
| Chemical | 0.0% |
| Communications/Telecommunications | 0.0% |
| Computer Science | 0.0% |
| Electrical | 3.7% |
| Energy | 0.0% |
| Environmental | 0.0% |
| Environmental Geoscience | 0.0% |
| Geotechnical | 3.7% |
| Industrial | 3.7% |
| Mechanical | 0.0% |
| Mineral Geoscience | 0.0% |
| Mining Engineering | 0.0% |
| Municipal | 3.7% |
| Occupational Health and Safety | 0.0% |
| Petroleum Engineering | 0.0% |
| Planning | 0.0% |
| Project Management | 3.7% |
| Research | 0.0% |
| Structural | 3.7% |
| Geomatics | 0.0% |
| Transportation | 7.4% |
| Water Resources | 3.7% |
| Not considering reducing staff | 74.1% |
| Other Discipline (please specify) | 3.7% |



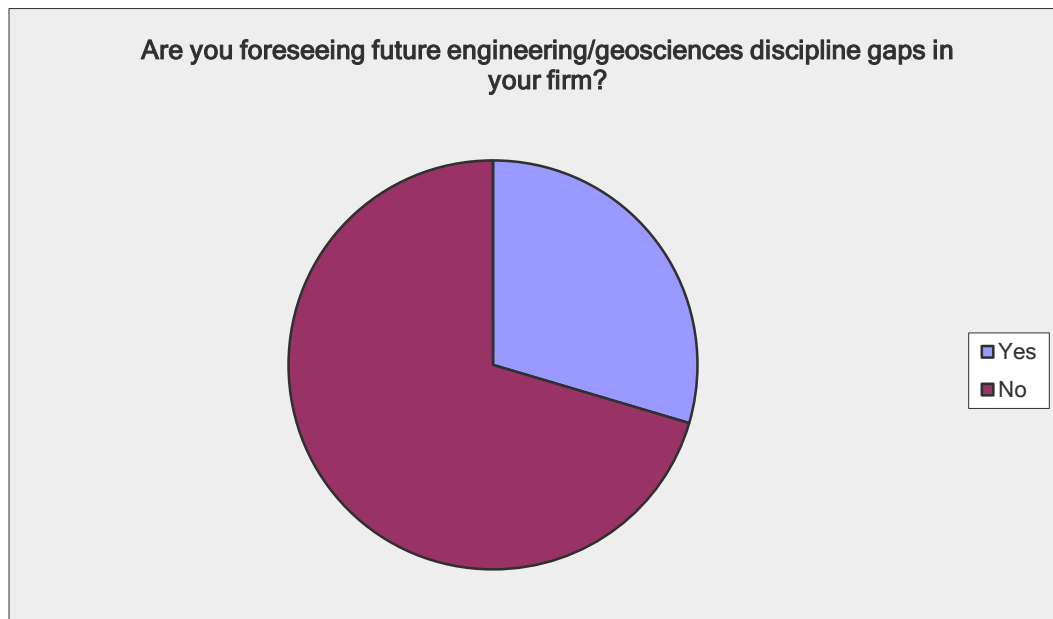
2.12 ANTICIPATED **ADDITIONS** TO STAFF BY DISCIPLINE

| Are you considering adding staff in any of the following disciplines? (check all that apply) | |
|--|------------------|
| Answer Options | Response Percent |
| Chemical | 0.0% |
| Communications/Telecommunications | 4.0% |
| Computer Science | 0.0% |
| Electrical | 8.0% |
| Energy | 4.0% |
| Environmental | 16.0% |
| Environmental Geoscience | 4.0% |
| Geotechnical | 16.0% |
| Industrial | 4.0% |
| Mechanical | 8.0% |
| Mineral Geoscience | 0.0% |
| Mining Engineering | 0.0% |
| Municipal | 20.0% |
| Occupational Health and Safety | 4.0% |
| Petroleum Engineering | 0.0% |
| Planning | 4.0% |
| Project Management | 8.0% |
| Research | 8.0% |
| Structural | 20.0% |
| Geomatics | 8.0% |
| Transportation | 8.0% |
| Water Resources | 12.0% |
| Not considering adding staff | 40.0% |
| Other Discipline (please specify) | 8.0% |



2.13 FORECASTING FUTURE ENGINEERING/GEOSCIENCE DISCIPLINE GAPS WITHIN FIRMS

| Are you foreseeing future engineering/geosciences discipline gaps in your firm? | |
|---|------------------|
| Answer Options | Response Percent |
| Yes | 29.6% |
| No | 70.4% |



Subsequent to this question, the survey asked respondents to forecast their discipline gaps into the future:

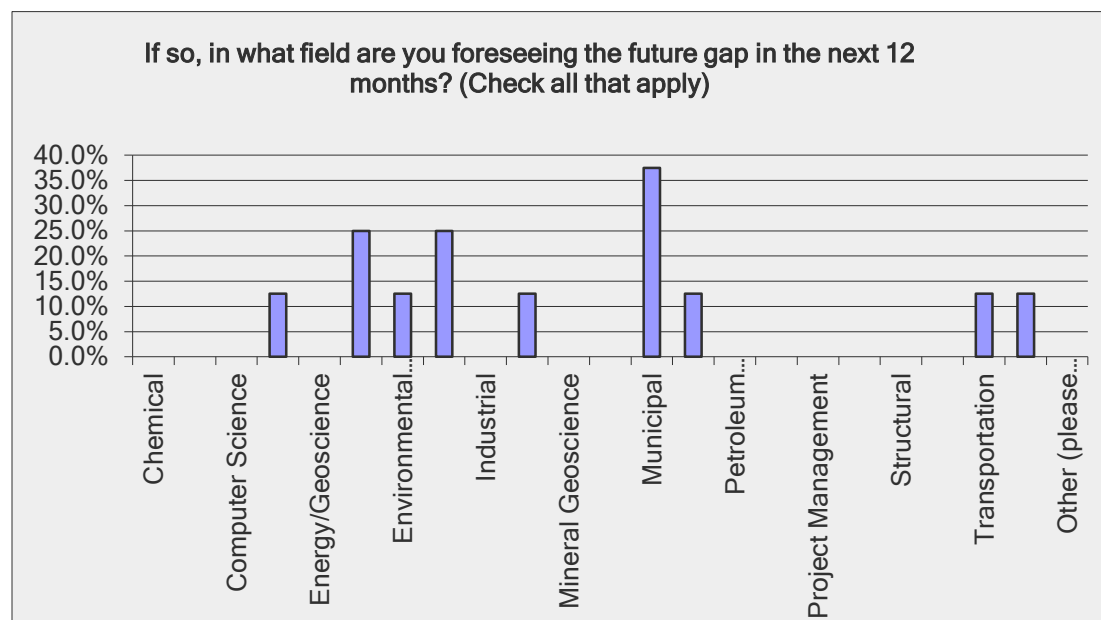
- *In 12 months*
- *In 2 – 5 years*

It also asked respondents to identify causes for these discipline gaps.

See the following pages for responses to these questions.

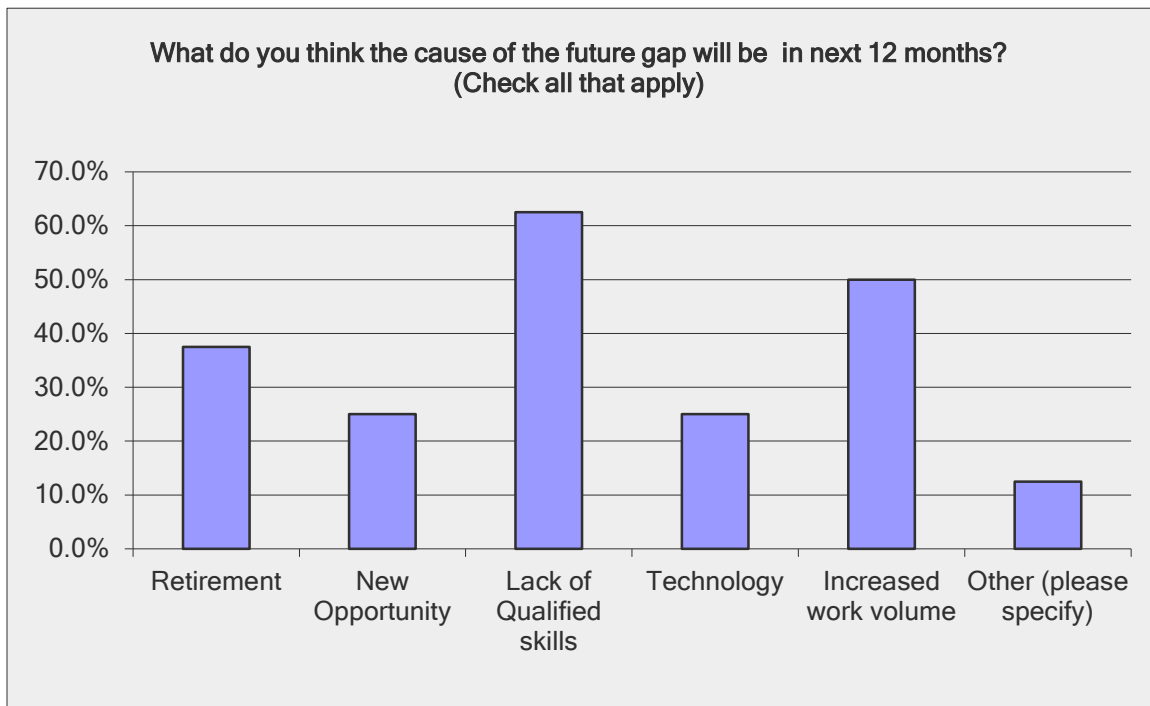
2.13.1.1 FORECASTING FUTURE ENGINEERING DISCIPLINE GAPS IN NEXT 12 MOS

| If so, in what field are you foreseeing the future gap in the next 12 months? (Check all that apply) | |
|--|------------------|
| Answer Options | Response Percent |
| Chemical | 0.0% |
| Communications/Telecommunications | 0.0% |
| Computer Science | 0.0% |
| Electrical | 12.5% |
| Energy/Geoscience | 0.0% |
| Environmental | 25.0% |
| Environmental Geoscience | 12.5% |
| Geotechnical | 25.0% |
| Industrial | 0.0% |
| Mechanical | 12.5% |
| Mineral Geoscience | 0.0% |
| Mining Engineering | 0.0% |
| Municipal | 37.5% |
| Occupational Health and Safety | 12.5% |
| Petroleum Engineering | 0.0% |
| Planning | 0.0% |
| Project Management | 0.0% |
| Research | 0.0% |
| Structural | 0.0% |
| Geomatics | 0.0% |
| Transportation | 12.5% |
| Water Resources | 12.5% |
| Other (please specify) | 0.0% |



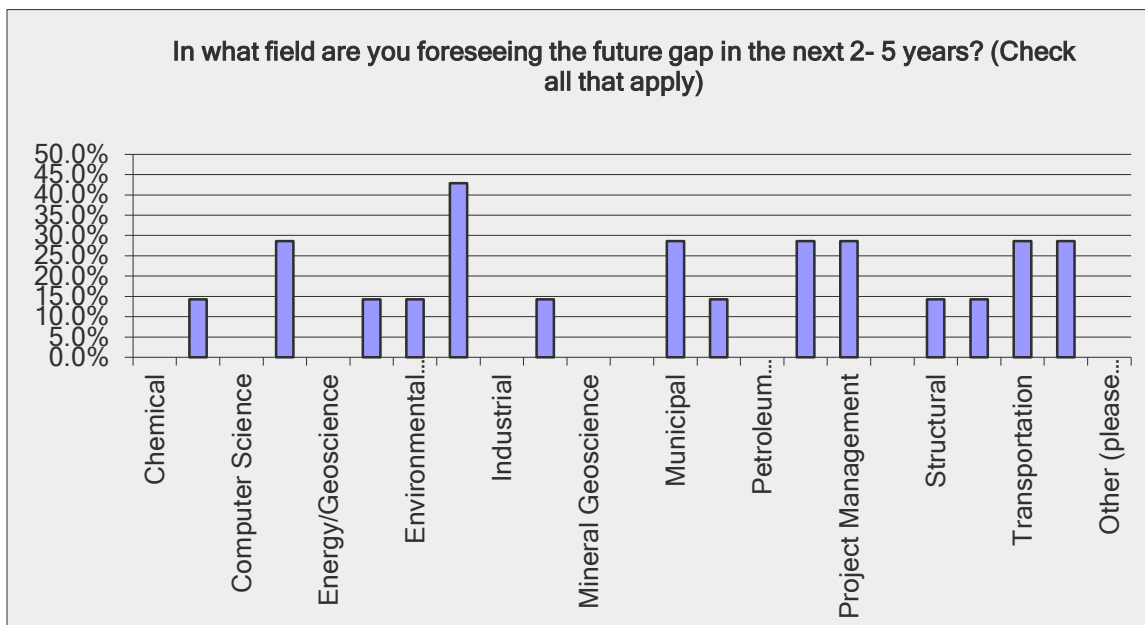
2.13.1.2 FORECASTING CAUSES OF FUTURE CAPACITY GAP IN NEXT 12 MONTHS

| What do you think the cause of the future gap will be in next 12 months? (Check all that apply) | |
|--|------------------|
| Answer Options | Response Percent |
| Retirement | 37.5% |
| New Opportunity | 25.0% |
| Lack of Qualified skills | 62.5% |
| Technology | 25.0% |
| Increased work volume | 50.0% |
| Other (please specify) | 12.5% |



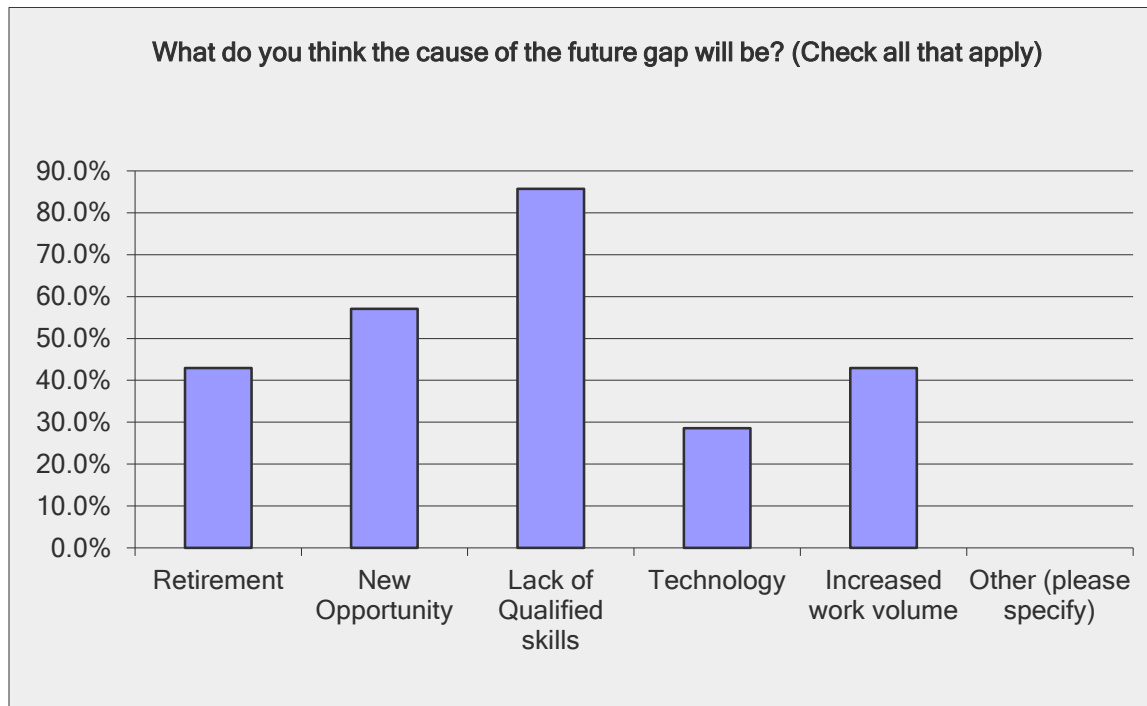
2.13.2.1 FORECASTING FUTURE DISCIPLINE GAPS IN NEXT 2-5 YRS

| In what field are you foreseeing the future gap in the next 2- 5 years? (Check all that apply) | |
|--|------------------|
| Answer Options | Response Percent |
| Chemical | 0.0% |
| Communications/Telecommunications | 14.3% |
| Computer Science | 0.0% |
| Electrical | 28.6% |
| Energy/Geoscience | 0.0% |
| Environmental | 14.3% |
| Environmental Geoscience | 14.3% |
| Geotechnical | 42.9% |
| Industrial | 0.0% |
| Mechanical | 14.3% |
| Mineral Geoscience | 0.0% |
| Mining Engineering | 0.0% |
| Municipal | 28.6% |
| Occupational Health and Safety | 14.3% |
| Petroleum Engineering | 0.0% |
| Planning | 28.6% |
| Project Management | 28.6% |
| Research | 0.0% |
| Structural | 14.3% |
| Geomatics | 14.3% |
| Transportation | 28.6% |
| Water Resources | 28.6% |
| Other (please specify) | 0.0% |



2.13.2.2 FORECASTING CAUSES OF FUTURE CAPACITY GAP IN NEXT 2 – 5 YEARS

| What do you think the cause of the future gap will be? (Check all that apply) | |
|---|------------------|
| Answer Options | Response Percent |
| Retirement | 42.9% |
| New Opportunity | 57.1% |
| Lack of Qualified skills | 85.7% |
| Technology | 28.6% |
| Increased work volume | 42.9% |
| Other (please specify) | 0.0% |



3.0 INTERPRETATION & ANALYSIS

3.1 WHERE ARE SASKATCHEWAN CONSULTING ENGINEERING FIRMS COMPLETING WORK

The data indicates a significant majority (75%) of respondents are only doing work in Saskatchewan. Results also indicate a large percentage (62.5%) of those participating in the survey have their head offices located in Saskatchewan, which implies 37.5% of firms operating in Saskatchewan are “multi-jurisdictional”.

...a significant majority (75%) of respondents are only doing work in Saskatchewan.

The difference between the amount of work being performed in Saskatchewan (75%) and the number of companies whose head offices are in Saskatchewan (62.5%) is 12.5%. This suggests those “multi-jurisdictional” companies who have a local office(s) are also undertaking work in Saskatchewan. This confirms industry’s experience that much of THE work being done in Saskatchewan is being done by local firms, although a significant amount – 25% - is being done outside of the province.

The survey then addressed where the 25% of work not being done in Saskatchewan is being completed. Respondents indicated the vast majority is being done in western Canada (predominantly in BC and Alberta). Given this result within the context of current trade agreements, it would be fair to conclude that the New West Partnership Trade Agreement (NWPTA) is influencing Saskatchewan firms. It will be interesting to monitor if consulting engineering firms increase their activity in Manitoba since it joined the NWPTA after the survey was concluded.



Given that respondents could select multiple options when indicating where outside of Saskatchewan their companies were completing work, it is not insignificant that over a third (37.5%) of the work being done outside of this province is occurring in Manitoba, Ontario, and northern Canada.

A total of 37% of respondents indicate their firms do work internationally. This is indicative of the presence of more multi-jurisdictional firms in this province in recent years.

The results to Questions 3, 4, and 5 that speak to where Saskatchewan firms are performing their work do not address whether Saskatchewan firms are exporting Saskatchewan employees to perform work out-of-province.

3.2 SIZE (NUMBER OF EMPLOYEES) OF CONSULTING ENGINEERING FIRMS IN SASKATCHEWAN

It is important to note that consulting engineering and geoscience firms consist of talent from a wide range of backgrounds. For example, in addition to engineers and engineers-in-training, their staff complement could include support staff including accounting, information technology, human resources, public relations, and administration.

Respondents were asked to indicate how many people their consulting engineering/geoscience firms employ in Saskatchewan as of the date of the survey. For the purposes of the survey, the definition of “employ” referred to all personnel engaged for Saskatchewan projects, including both “resident” and “retained” employees.

Results point to the fact that the vast majority of Saskatchewan consulting engineering firms are smaller firms (under 25 employees) with a lesser but significant number of medium-sized firms (between 25-74 employees), and a limited number of larger firms (over 100 employees). These results validate industry’s experience – i.e. there are significantly more smaller consulting engineering firms practicing in Saskatchewan than larger firms.

3.3 CAPACITY TO INCREASE VOLUME OF ACTIVITY IN RESPONSE TO DEMAND

As of April, 2016, an overwhelming 89% of Saskatchewan consulting engineering firms had the ability to increase the volume of activity with their current human resources in the short term if the demand for their firms increased.

Respondents were asked to quantify by percentage the volume they felt they could increase their activities.

The majority indicated they could increase capacity by 30%, but a significant number suggested they could increase their capacity by up to 80%.

This is an important statistic against which to benchmark future activity. Based on anecdotal evidence, this report’s result about capacity to increase volume of activity is significantly higher than how Saskatchewan consulting engineering companies would have responded two or three years ago.



3.4 PERCENTAGE BREAK DOWN OF ACCREDITED PROFESSIONALS/PROFESSIONALS-IN-TRAINING AND TECHNOLOGISTS/TECHNICIANS

An important measure of capacity in the consulting engineering industry is the ratio of accredited professionals relative to professionals in training. Another key measure of the industry's capacity is the number of technologists and technicians relative to professionals in a firm.

Those responding indicated there were 267 P.Eng.'s (fully accredited professional engineers) relative to 82 Engineers-in-Training. This is a healthy 3.25:1 ratio that indicates a solid number of new entrants into the engineering profession are choosing consulting as a career of choice.

Responses indicated there are significantly fewer Professional Geologists in the consulting sector, but that there are almost as many Geologists-in-Training as there are accredited Geologists currently practicing in the consulting sector.

As noted above, a consulting engineering firm has a significant number of employees other than professional engineers which is confirmed by the survey's responses. Results indicated there were 228 technologists/technicians, which is approximately 85% of the number of consulting engineers. As well, respondents indicated there were 293 "other" specialists that could constitute an array of talent that is necessary to operate an effective consulting engineering company.

This solid ratio of technologists/technicians and other specialists relative to the professional engineer indicates a strong capacity to deliver consulting engineering services to the client.



... solid ratio of technologists/technicians and other specialists relative to the professional engineer indicates a strong capacity to deliver consulting engineering services to the client.

3.5 CONSULTING ENGINEERING INDUSTRY'S PERSONNEL EXPERIENCE LEVELS AND GAPS

Another critical element of industry capacity is experience levels within the industry. To illustrate, if there is a large number of employees with senior level experience, but few with mid or junior level experience, it makes it very difficult to efficiently deliver consulting engineering projects, just as it would be equally difficult to effectively deliver projects with significant junior experience but little senior experience. There needs to be a good balance of employees with junior, mid-level and senior experience in order for the industry to operate at peak capacity.

The survey defined an employee's experience into three different levels:

- Junior Level = 1 – 5 years of experience
- Mid-Level = 6 – 15 years of experience
- Senior Level = Over 15 years of experience

It further broke down the experience levels of various types of specialists within consulting engineering firms, specifically:

- Engineers/geoscientists
- Technologists/technicians
- Other technical staff
- Support staff

Recognizing compliance would be minimal if survey participants were required to input an exact number of employees in each of the above categories, it was decided to offer respondents a range in each category. This was to encourage a larger number of responses to assist with creating an “experience” benchmark for each of the above categories.



3.5.1 Junior Level

ENGINEERS/GEOSCIENTISTS: Respondents indicated the vast majority of junior engineers/geoscientists had 1-2 years of experience, with a limited percentage of those with 3-5 years of experience. This indicates at the time of the survey there had been a significant influx of new engineers/geoscientists into the consulting industry.

TECHNOLOGISTS/TECHNICIANS: The greatest percentage of technologists/technicians had 1-2 years of experience, a solid percentage had 3-4 years of experience, with no responses indicating 5 years of experience in this category.

OTHER TECHNICAL STAFF: Likewise, the greatest percentage of other technical staff offered 1-2 years of experience, a lesser but significant percentage offered 3 years of experience, with no responses indicating 4 or 5 years of experience.

SUPPORT STAFF: Interestingly, respondents also indicated that the vast majority of their junior support staff only had 1-2 years of experience.

In summary, the responses about junior level experience suggest that in the recent years, there has been a significant influx of new engineers/geoscientists, technologists/technicians and other technical staff into the consulting engineering industry. This validates the observations in the industry.

3.5.2 Mid-level

ENGINEER/GEOSCIENTISTS: Responses indicate that most engineers/geoscientists at the mid-level range offer 9-11 years of experience. There was a smaller percentage indicating 6-7 years of experience, and an even smaller percentage indicating 12-15 years of experience.

TECHNOLOGISTS/TECHNICIANS: The trend for technologists/technicians at the mid-level experience level differed slightly from that of engineers/geoscientists in that the majority indicated 6-9 years of experience, with limited respondents indicating 10-14 years of experience, but there was a higher percentage of technicians/technologists with 15 years of experience.

OTHER TECHNICAL STAFF: These staff offer experience levels in the 6-12 year range, with a limited number offering experience closer to the 15 year range.

SUPPORT STAFF: = Results indicate there is a full range of 6-15 years of experience, with a significant number having 15 years of experience.

In summary, the mid-level results somewhat contradict industry's anecdotal understanding of the percentage of mid-level experience currently available in the industry. Over the last decade or more, industry has operated under the impression that a mid-level experience gap exists. However, during this same time-frame many junior staff were asked to take on significant responsibility, and these individuals are now the mid-level experience resources.

3.5.3 Senior-level

ENGINEER/GEOSCIENTISTS: Responses indicated a broad range of greater than 15 years of experience, with a statistically significant number at retirement age who are still practicing in the consulting engineering industry.

TECHNOLOGISTS/TECHNICIANS: Results indicated a smaller percentage of technologists/technicians with senior level experience.

OTHER TECHNICAL STAFF: Results indicated a smaller percentage of other technical staff with senior level experience.

SUPPORT STAFF: Interestingly, there was a significant percentage of support staff with senior level experience.

In summary, there appears to be a high percentage of senior level engineers and geoscientists and associated support staff, but a smaller percentage of senior level technologists/technicians and other technical staff.

In conclusion, based on the response count, one could conclude that within Saskatchewan consulting engineering firms there is a fairly even distribution among junior-, mid- and senior-level employees. This is contrary to industry's perception that there is a significant gap at the mid-level.

3.6 SKILLS GAP AT VARIOUS EXPERIENCE LEVELS

Respondents were asked to indicate skills gaps at the professional junior, mid, and senior experience levels as well as the management level.

Responses indicated a percentage skills gap as follows:

| Level | Percentage |
|------------|------------|
| Junior | 36% |
| Mid | 39% |
| Senior | 26% |
| Management | 26% |

Respondents perceive there to be a significant skills gap at both the junior and mid experience levels. It is also interesting to note that respondents believe approximately a quarter of senior level employees have a skills gap.

3.7 PERSONNEL HOURS **IMPORTED** FROM OTHER PROVINCES AND RELATIVE EXPERIENCE LEVELS

Only those firms that are multi-jurisdictional can take advantage of the opportunity to import talent from other provinces to supplement their teams. Survey participants were asked to identify the percentage of personnel hours being imported from other provinces to complete work in Saskatchewan. Respondents indicated that less than 10% of their personnel hours are imported from other provinces to work in Saskatchewan.

Therefore, the survey results confirm industry's perception that Saskatchewan consulting engineering firms employ local talent to complete local work. The expertise is in Saskatchewan.

Of the personnel hours imported, over half is at the senior experience level, with a third at the junior level, and just over a quarter at the mid experience level. This implies that the majority of personnel hours being brought in are for their senior level experience, knowledge and expertise. As well, logically it makes sense that there is more junior level experience being brought into the province to complete work here than mid-level experience because it is more cost effective.

...the survey results confirm industry's perception that Saskatchewan consulting engineering firms employ local talent to complete local work. The expertise is in Saskatchewan.



*3.8 PERSONNEL HOURS **EXPORTED** FROM SASKATCHEWAN TO OTHER PROVINCES AND RELATIVE EXPERIENCE LEVELS*

Survey participants were asked to identify the percentage of personnel hours being exported from Saskatchewan to other provinces. Only those firms that are multi-jurisdictional can take advantage of exporting talent to other provinces/countries as a retention strategy. Those firms that operate solely in Saskatchewan do not have this option.

As of April, 2016, respondents indicated that individual Saskatchewan firms were exporting personnel hours anywhere from 10% up to a total of 50%.

Of those personnel hours being exported, over half were at the senior experience level. This indicates that senior Saskatchewan engineering/geoscience experience is valued outside of the province.

Only a quarter of personnel hours at both the junior and mid-level experience levels were being exported.

At the time of the survey, Saskatchewan firms were beginning to export talent, indicating there was less demand than supply.



3.9 ENGINEERING DISCIPLINES EMPLOYED BY SASKATCHEWAN CONSULTING ENGINEERING FIRMS

The vast majority of those employed by consulting engineering firms have a civil engineering background. Civil engineering is “a professional engineering discipline that deals with the design, construction, and maintenance of the physical and naturally built environment, including works like roads, bridges, canals, dams, and buildings.”

Responses indicated the main discipline categories employed by Saskatchewan firms include:

- Water Resources 51.9%
- Environmental 44.4%
- Municipal 40.7%
- Transportation 40.7%
- Structural 37.0%
- Project Management 37.0%
- Planning 33.3%
- Geotechnical 33.3%
- Electrical 33.3%

The results also indicate that many Saskatchewan consulting engineering firms are multi-disciplined. However, the survey did not request the total number of individuals in each discipline in each company.

ANTICIPATED REDUCTIONS: When the survey was completed, approximately 75% of firms were not reducing staff in many disciplines, but disciplines where firms were considering reducing staff included:

- Transportation 7.4%
- Electrical 3.7%
- Geotechnical 3.7%
- Industrial 3.7%
- Municipal 3.7%
- Structural 3.7%

ANTICIPATED ADDITIONS: A total of 40% of responding firms indicated they were not considering adding staff as of April, 2016. The following disciplines are the ones in which additions are being contemplated:

- Municipal 20%
- Structural 20%
- Environmental 16%
- Geotechnical 16%
- Electrical 8%
- Mechanical 8%
- Project Management 8%
- Geomatics 8%

Responses indicated cautious growth in specific disciplines/sectors. This could be based on an understanding of potential funding and regulatory requirements that must be met in the near future.

3.10 FORECASTING FUTURE ENGINEERING/GEOSCIENCE DISCIPLINE GAPS WITHIN FIRMS

Approximately 30% of respondents indicated they foresaw future engineering /geosciences discipline skills gap.

WITHIN THE NEXT 12 MONTHS, respondents indicated they saw skills gaps in the following disciplines:

| | |
|--------------------------------|-------|
| • Municipal | 37.5% |
| • Environmental | 25.0% |
| • Geotechnical | 25.0% |
| • Electrical | 12.5% |
| • Environmental Geoscience | 12.5% |
| • Mechanical | 12.5% |
| • Occupational Health & Safety | 12.5% |
| • Transportation | 12.5% |
| • Water Resources | 12.5% |

What isn't clear is whether future skills gaps were identified as necessary because new skills in these areas are required for current work, for future work, or simply that the current skills for current work are inadequate.

In the next 12 months, the potential causes of future gaps were identified as:

| | |
|----------------------------|-------|
| • Lack of Qualified Skills | 62.5% |
| • Increased work volume | 50% |
| • Retirement | 37.5% |
| • Technology | 25% |
| • New Opportunity | 25% |

The data is insufficient to be able to accurately identify why respondents perceived lack of qualified skills would contribute to a future gap.

WITHIN THE NEXT 2 – 5 YEARS, respondents indicated they saw skills gaps in the following disciplines:

| | |
|----------------------|-------|
| • Geotechnical | 42.9% |
| • Municipal | 28.6% |
| • Water Resources | 28.6% |
| • Transportation | 28.6% |
| • Planning | 28.6% |
| • Project Management | 28.6% |
| • Electrical | 28.6% |

However, in the order of greatest to least, the potential causes of future gaps were identified as:

| | |
|----------------------------|-------|
| • Lack of Qualified Skills | 85.7% |
| • New Opportunity | 57.1% |
| • Increased work volume | 42.9% |
| • Technology | 28.6% |

The data does not provide insight as to why 85.7% of companies believe there will be a lack of qualified skills in the next 2 – 5 years.

4.0 RECOMMENDATIONS

Recommendation 1:

STABLE CAPITAL INVESTMENT EQUALS EFFECTIVE CAPITAL INVESTMENT

Recommendation: Public policy should signal the importance of having stable capital investment. Inconsistent capital spending leads to wide swings in the consulting engineering industry capacity, negatively impacting government expenditures.

As noted earlier in the report, past measures of the consulting engineering and geoscience industry were largely anecdotal in nature. For instance, over thirty years ago, during a time of economic retraction, there was significant out-migration of professional engineering and geoscience talent, particularly at the junior and mid-levels because demand for these professional services was greatly reduced. The market could not accommodate the supply at that time.

When the latest economic growth occurred in the province 10 years ago, the consulting engineering industry struggled to meet demand. During this time of rapid economic growth, both the private and public sector invested heavily in large capital projects. This put strain on the industry. Due to previous out-migration, there were a limited number of professionals with mid-level experience, creating a significant capacity gap. As a result, many professionals with junior level experience were asked to step into these middle management roles, often with limited support from senior level engineers and geoscientists because their capacity was stretched as well. It made it extremely difficult for industry to react to this peak demand.

Capital budgets were either overspent in this timeframe, or less was built. Neither outcome was as effective as if capital budgets were stable throughout.

The capacity of the consulting engineering and geoscience industry continues to be vulnerable to wide swings of economic growth and decline. A significant reduction in knowledge and experience occurs when there is limited demand for the industry's services, leading to greatly reduced capacity, not only in the actual numbers of professionals, but also in experience levels. This makes it very difficult to react quickly when there is an upturn in the economy. With increased demand and limited supply, commissions increase which leads to increased government expenditures.

Stable public investment in capital projects supports a healthy consulting engineering and geoscience industry which in turn leads to reduced, stable government expenditures.

Recommendation 2:

DEMAND FOR SPECIFIC ENGINEERING AND GEOSCIENCE DISCIPLINES

Recommendation: A government understanding of the breadth of the engineering and geoscience continuum, and where variations in capacity exist, will allow for more informed capital investment decisions.

Not only do experience levels generally impact industry capacity, but the supply of professionals who specialize in particular disciplines does as well. Based on individual company's awareness of current market demand, respondents were asked to indicate which disciplines they anticipate they will require in the near and medium term.

Those who demand engineering and geoscience services need to be aware of the capacity of the various disciplines. For instance, those capital projects that require structural, mechanical, and electrical expertise will struggle if there is not the industry capacity in Saskatchewan to support those projects. This survey was successful in identifying at a high level the particular areas of specialization where the industry has capacity and where there are gaps. In the next iteration of the survey, it is ACEC-SK's intent to drill down further to identify areas of specialty within each of the disciplines to assist clients, both private and public, to make more informed decisions about what capital projects for which it will seek consultant engagement.

Recommendation 3:

STUDENTS GRADUATING FROM UNIVERSITY WITH AN ENGINEERING OR GEOSCIENCE DEGREE

Recommendation: As a matter of policy, the government needs to be making capital investment decisions that allow for the maintenance of the engineering and geoscience industry.

The survey very clearly points out that there has been an influx of junior engineers into the industry in recent years. The experience levels and the ratios of professionals-in-training relative to fully certified professionals are significant. One then has to juxtapose this data with that of the trend for companies to be exporting talent to other jurisdictions, and one can conclude that opportunities for professionals with junior experience levels are dwindling. This is going to have a significant impact on future capacity.

If the industry continues with its inability to employ and train junior level engineers and geoscientists, the industry's capacity will be reduced, and as a consequence it will not be able to react easily to any sudden economic growth.

5.0 CONCLUSIONS

The ACEC-SK 2016 Industry Capacity Survey has produced a baseline to measure future Saskatchewan consulting engineering industry capacity. It looks at where work is currently being completed, the experience levels of those performing the work, and which disciplines have gaps and where gaps are anticipated in the future.

The survey first identifies where Saskatchewan consulting engineering companies are completing their work; an overwhelming number of responses indicate Saskatchewan firms are performing their work locally. The remainder of the work is being performed predominantly in western Canada. This goes a long way to dispel the myth perpetrated by some that a significant amount consulting engineering talent is being brought in to the province. In truth, the vast majority of capital projects using engineering professional services are being performed by local consulting engineering firms. Their employees are often graduates of the Saskatchewan universities, raising families in Saskatchewan, and supporting local communities. Who better to contribute to Saskatchewan's quality of life than home-grown consulting engineers?

The fact that the majority of these companies are smaller (less than 25 employees) also reinforces the notion that many are locally based. Locally based firms can be more agile and responsive to the changing needs of Saskatchewan clients. There are some large multi-jurisdictional firms operating in this province, and although they are in the minority, this offers the benefit of increasing Saskatchewan industry capacity through introducing new kinds of expertise and experience.

Consulting engineering firms do not just employ engineers. They also employ technologists, technicians, and other technical experts in addition to support staff. The entire team promotes the success of the company and therefore contributes to industry capacity. What is encouraging is that there appears to be an almost 1:1 ratio between design professionals and technical /support staff. A large imbalance between these two groups would hinder industry capacity. As well, there appears to be a solid balance among those with junior, mid-level, and senior experience.

Perhaps one of the most important conclusions relates to how respondents answered questions about which engineering disciplines are currently being utilized in the province, which ones are in the most demand, and where respondents viewed potential future gaps. Understanding which engineering disciplines are currently utilized directly relates to the types of capital projects currently underway. For instance, are there current projects that require significant amounts of electrical engineering or geotechnical expertise? Or, are there increased municipal budgets to address water issues, or transportation challenges?

Further, the survey responses provided insight into what disciplines the consulting engineering industry anticipates it will require in the near and medium term. This was based on their understanding of what capital projects have recently begun, are anticipated to begin in the near future, or "informed speculation" based on their observations about the pressing needs that currently exist.

This understanding demonstrates the value of labour market research for this industry. The total number and types of consulting engineering and geoscience personnel in Saskatchewan provides

decision-makers with valuable information about what resources are available in the private sector to support capital investments as a whole, as well as specific types of projects that will require specific types of expertise.

Insight into future policy development may rest with an understanding of the value consulting engineers bring to capital investment advice. Industry is well aware of the state of much of the province's infrastructure. This means it can provide critical advice about what should be prioritized, and how to get the best value for the investment. Regardless of which projects are prioritized, clients (both public and private) require a healthy local industry to support capital project needs. To reiterate, the survey provides direction to government regarding what areas of specialization consulting engineering employment are of primary importance to support and, therefore, which policies may be implemented to ensure the healthy future development of this industry in Saskatchewan which will aid in provincial economic growth.

The statistics and commentary within the report are useful for policy development to support growth of the industry. Findings have implications for developing a proactive policy for human resource development, and addressing current and future potential labour supply and demand gaps. The survey also provides direction to government regarding what areas of consulting engineering employment are of primary importance to support and, therefore, which policies may be implemented to ensure the healthy future development of this industry in Saskatchewan.



Ultimately, the most important insight from this survey is that consulting engineering capacity is directly related to capital investment. If consistent, stable capital investment is not maintained, wide swings in consulting engineering capacity will continue, leaving investors in a perpetually locked cycle of unnecessarily high expenditures.

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