

HEAVY INDUSTRIAL CONSTRUCTION AND MAINTENANCE WORKFORCE OUTLOOK TO 2020

May 2017



HIGHLIGHTS OF SPRING 2017 UPDATE

- The projection identifies a drop in labour demand in 2018 with a slow upswing later in 2018. It is recognized that project plans in the current environment are very fluid and any changes will impact the future labour demands.
- Labour demand is lower than projected in previous years due to an increase in the number of projects that have been cancelled or delayed due to low oil prices.
- Labour demand is projected to go up from mid-2018 to 2020, however, the 2018-2020 numbers are considered soft as a number of projects under development may not proceed.
- Ongoing maintenance is a stabilizing influence on construction trades since existing facilities are getting older and new facilities are coming into production.
- The top five occupations with the highest demand include boilermakers, pipefitters, labourers, carpenters and electricians. As the model does not incorporate labour supply projections, no comment is made on supply-demand relationships. Industry representatives have reported that, with the exception of boilermakers, other trades have not been difficult to recruit.

PURPOSE AND BASIS OF WORKFORCE PROJECTIONS

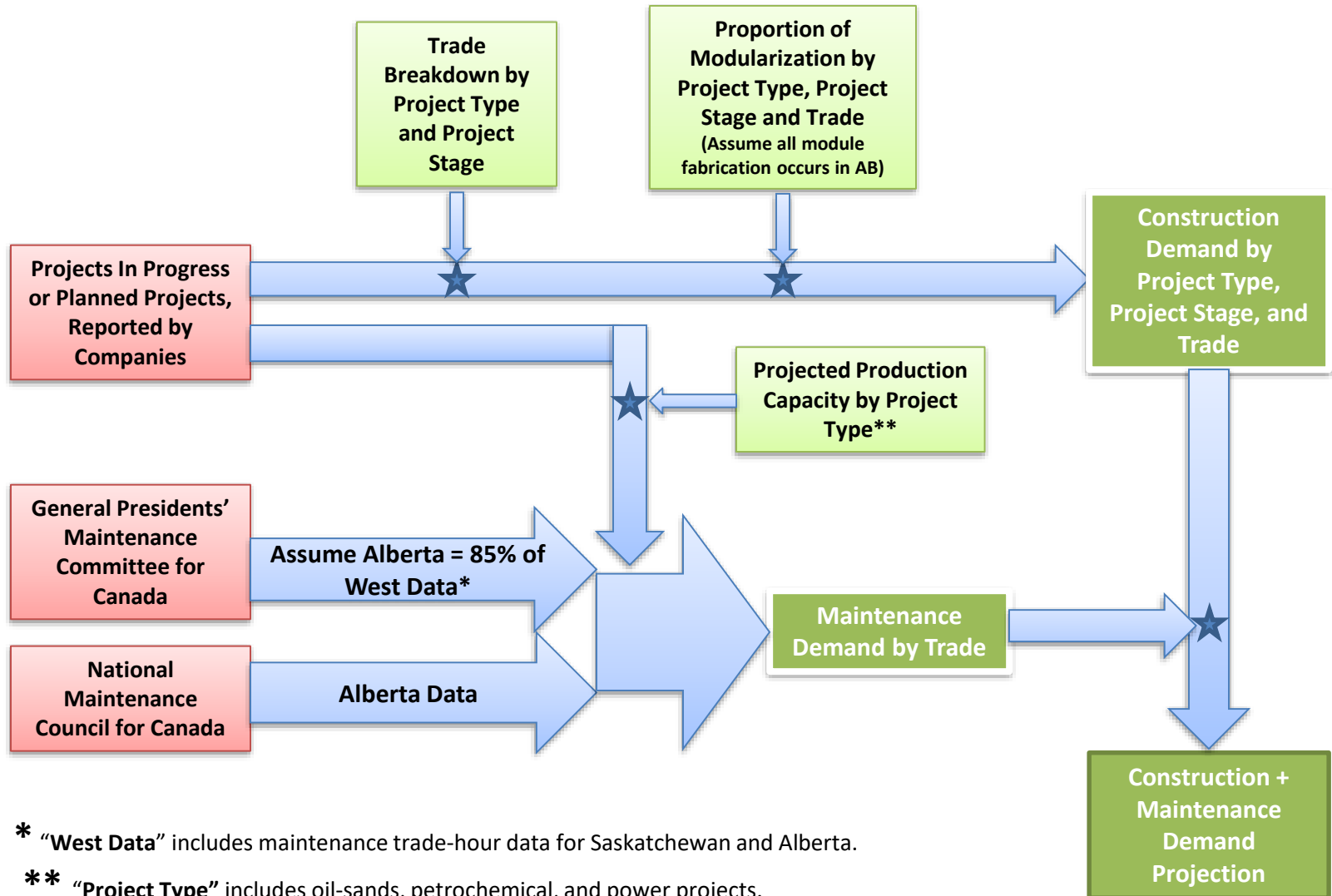
- **The Sector Intelligence Model (SIM) for Heavy Industrial Construction, formerly OILMAP, is a collaboration between the government of Alberta and COAA that has been in place since January 2012.**
 - **The purpose is to provide a better understanding of the heavy industrial construction and maintenance workforce demands in Alberta.**
- **The projections are based on micro-economic modelling that is updated twice a year: Spring (May) and Fall (November).**
- **The projections include projects that have been validated by individual companies. Only projects that have a validated start date are included in the model.**
- **The projections for the ongoing and turnaround maintenance are based on data from the General Presidents' Maintenance Committee for Canada and the National Maintenance Council For Canada.**

HEAVY INDUSTRIAL CONSTRUCTION AND MAINTENANCE DEMAND METHODOLOGY SECTOR INTELLIGENCE MODEL (SIM)

1. **Calibration Factors based on past construction projects**
 - **Total Project Workforce Projection, based on**
 - Type of Project (e.g. oil sands, petrochemical, pipeline, power)
 - Size of Project, measured by output capacity (e.g. bpl/day, mlbs/year, MW)
 - **Workforce Breakdown**
 - By Trade
 - By Stage of Project
2. **Projection of Current and Future Construction Demand**
 - **Identify Projects Planned or In-progress**
 - Type (e.g. oil sands, petrochemical, pipeline, power)
 - Size (e.g. bpl/day, mlbs/year, MW)
 - Start/End Dates
 - Status (e.g. received regulatory approval)
 - **Projection = Sum of Month by Month Project Demands**
3. **Reasonableness Review by Industry Practitioners**

HEAVY INDUSTRIAL CONSTRUCTION AND MAINTENANCE DEMAND

METHODOLOGY: SECTOR INTELLIGENCE MODEL (SIM) APPROACH



SPRING 2017 UPDATE: SECTORS

- **Updates were collected from companies between March and May 2017:**

1) Heavy Industrial Construction Projects:

- **On-Site Construction**
 - Oil Sands (Mining, In-situ, Upgrading)
 - Petrochemical
 - Pipeline (Pipelines, Pump-stations, Terminals)
 - Power Generation (Wind, Gas, Solar)
- **Off-Site Module Fabrication**
 - Oil Sands (Mining, In-situ, Upgrading)
 - Petrochemical

2) Maintenance Projects:

- **Ongoing maintenance**
- **Turn-around maintenance**

SPRING 2017 UPDATE: PROJECT CATEGORIES

There are seven categories:

- **Projects included in the model:**
 - **“Planning Stage” with or without anticipated start and end date.**
 - **“Received Regulatory Approval” and plan to proceed with start/end date.**
 - **“Construction In-Progress” with start/end date.**
 - **“Postponed” but have an anticipated start and end date.**
- **Projects removed from the model:**
 - **On-Hold with no start date identified.**
 - **Cancelled –removed from a companies capital plans.**
 - **Completed – project is operational with no construction workforce on site.**

SPRING 2017 UPDATE:

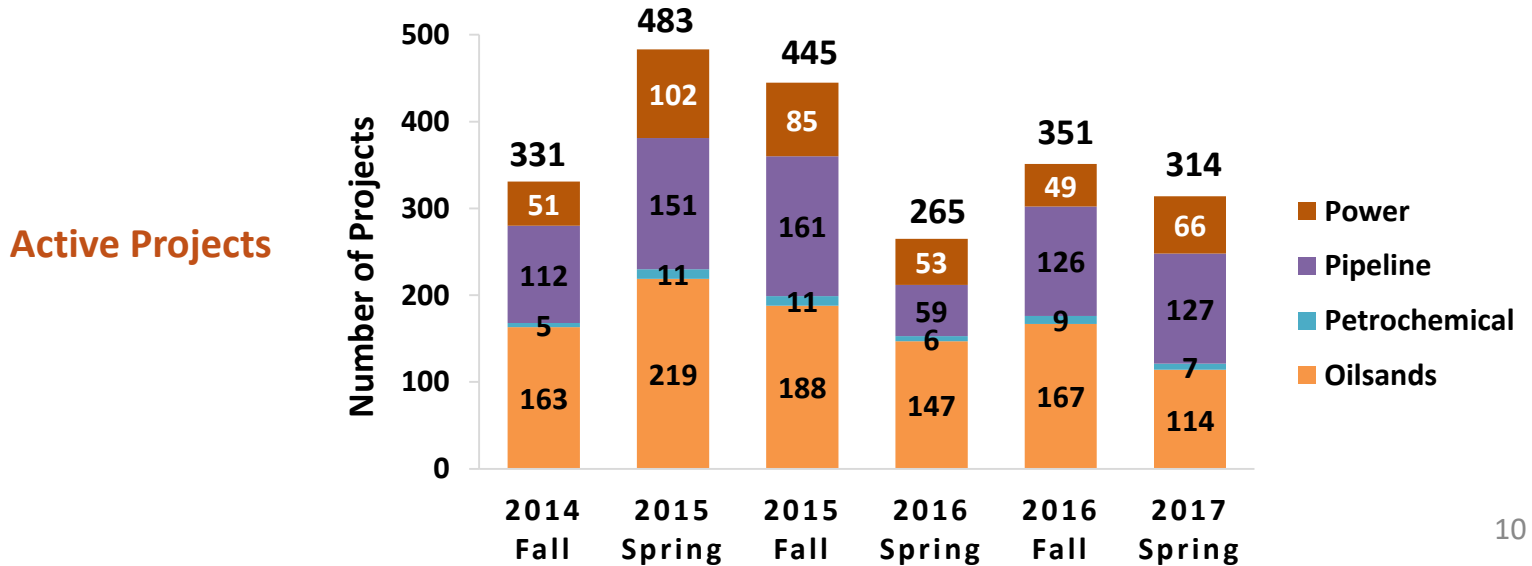
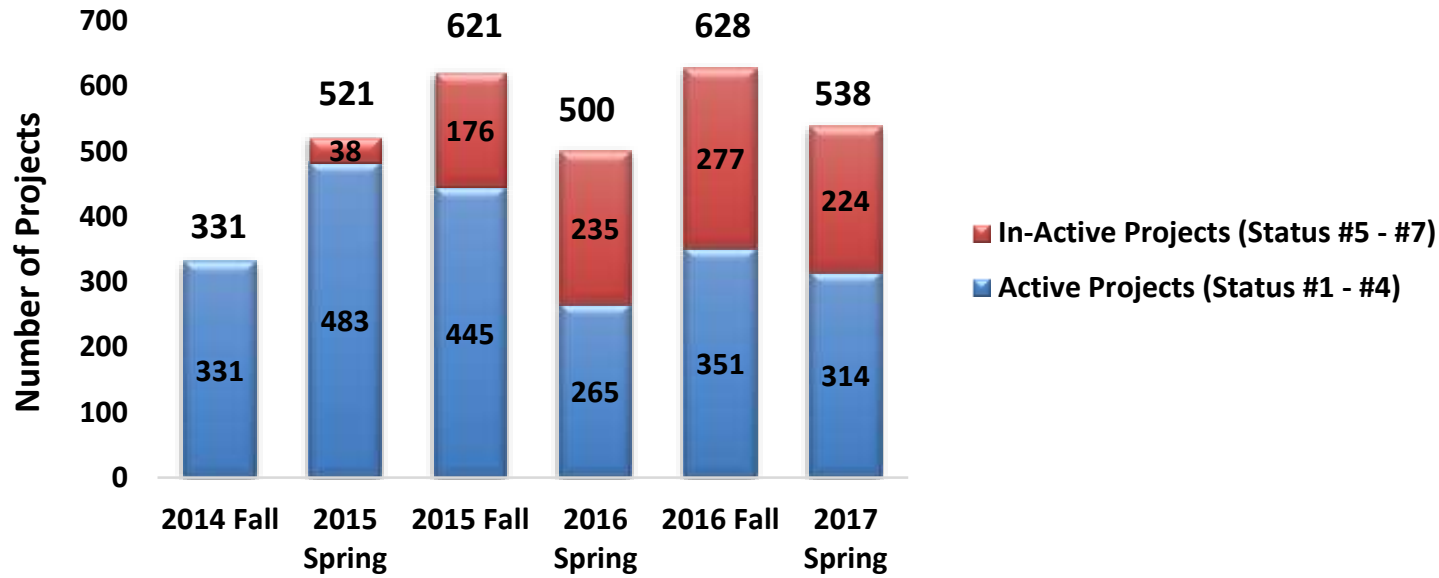
SURVEY RESPONSE AND REASONABLENESS

- **132 companies were contacted to gather information.**
 - Due to changes within the industry, 15 companies were sold or merged over the last year.
 - There was a high response rate from the 117 active companies (75%).
- **A total of 538 projects were identified of which 303 are in regulatory approval stage or planned to proceed.**
 - 156 projects have been reported as on-hold with no start date.
 - 34 projects were reported cancelled.
- **Reasonableness checks with COAA indicated that the projection reflects the current environment with the exception of slide #14.**
 - The actual workforce numbers for on-site workforce is higher than the model indicates .
 - This is due to unreported project delays and project overruns: the model showed the workforce ramping down, in actuality workforce was continuing at full strength.

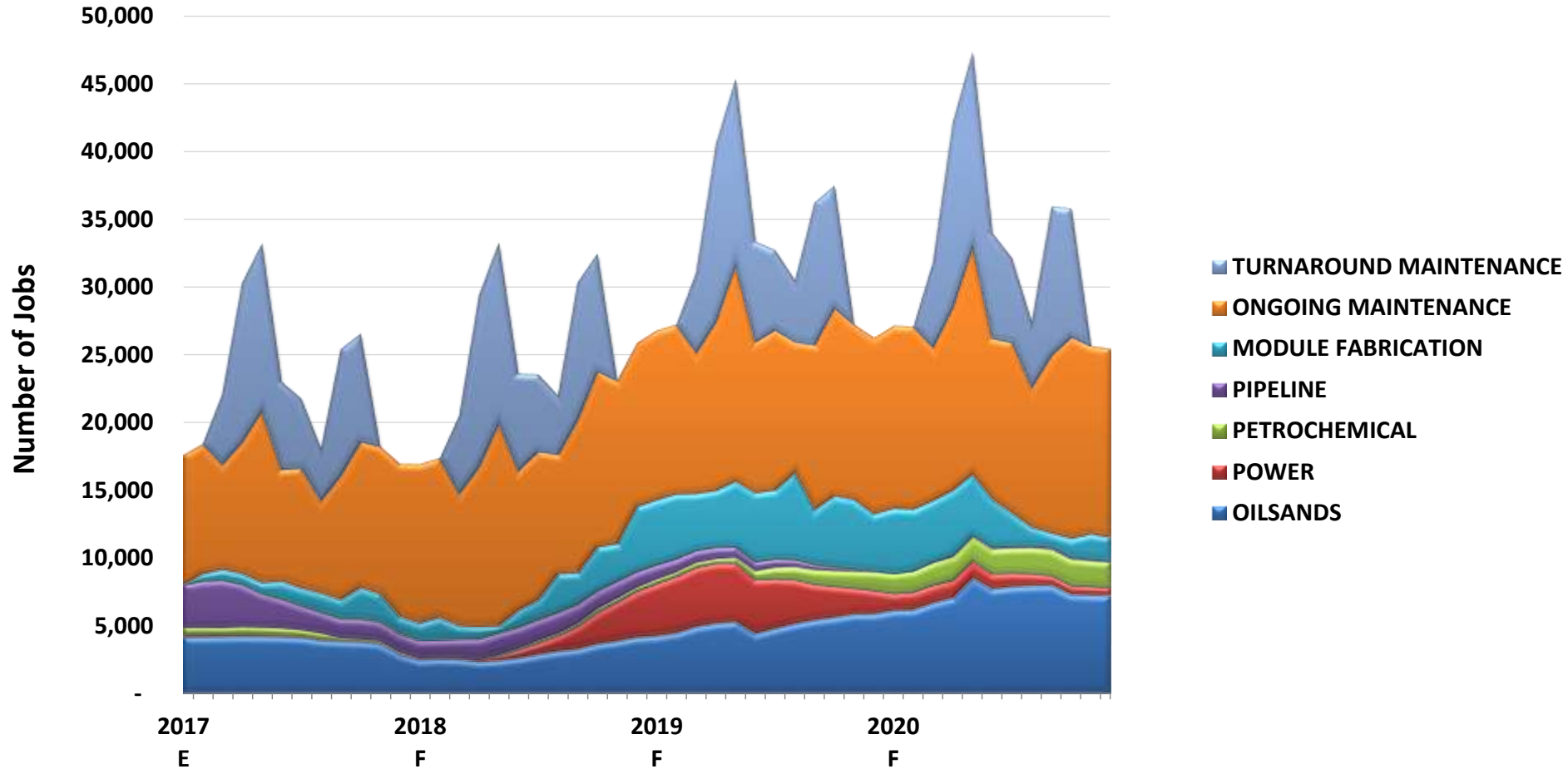
SPRING 2017 UPDATE: TOTAL PROJECT COUNT

Sr.	Status	Mining	In-situ	Upgrading	Natural Gas Production	Natural Gas Processing	Petrochemical	Pipelines	Pump-Stations	Terminals	Wind Power	Gas Power	Solar Power	Hydro Power	TOTAL
1	Planning Stage	5	43	3	0	1	2	23	2	3	22	9	0	2	115
2	Received Regulatory Approval and Plan to Proceed	0	14	0	2	2	1	21	7	2	3	13	2	1	68
3	Construction In-Progress	2	11	9	8	8	4	40	13	13	2	9	0	1	120
4	Postponed (provide anticipated start and end date)	0	4	0	0	2	0	2	1	0	0	2	0	0	11
5	On-Hold (cannot identify the start and end date)	7	94	11	1	0	2	11	5	4	2	18	0	1	156
6	Cancelled (completely no plan to proceed)	0	13	0	1	1	0	11	1	0	0	7	0	0	34
7	Completed (Construction done and ready to start production)	2	9	0	0	2	6	6	2	3	2	2	0	0	34
	TOTAL	16	188	23	12	16	15	114	31	25	31	60	2	5	538

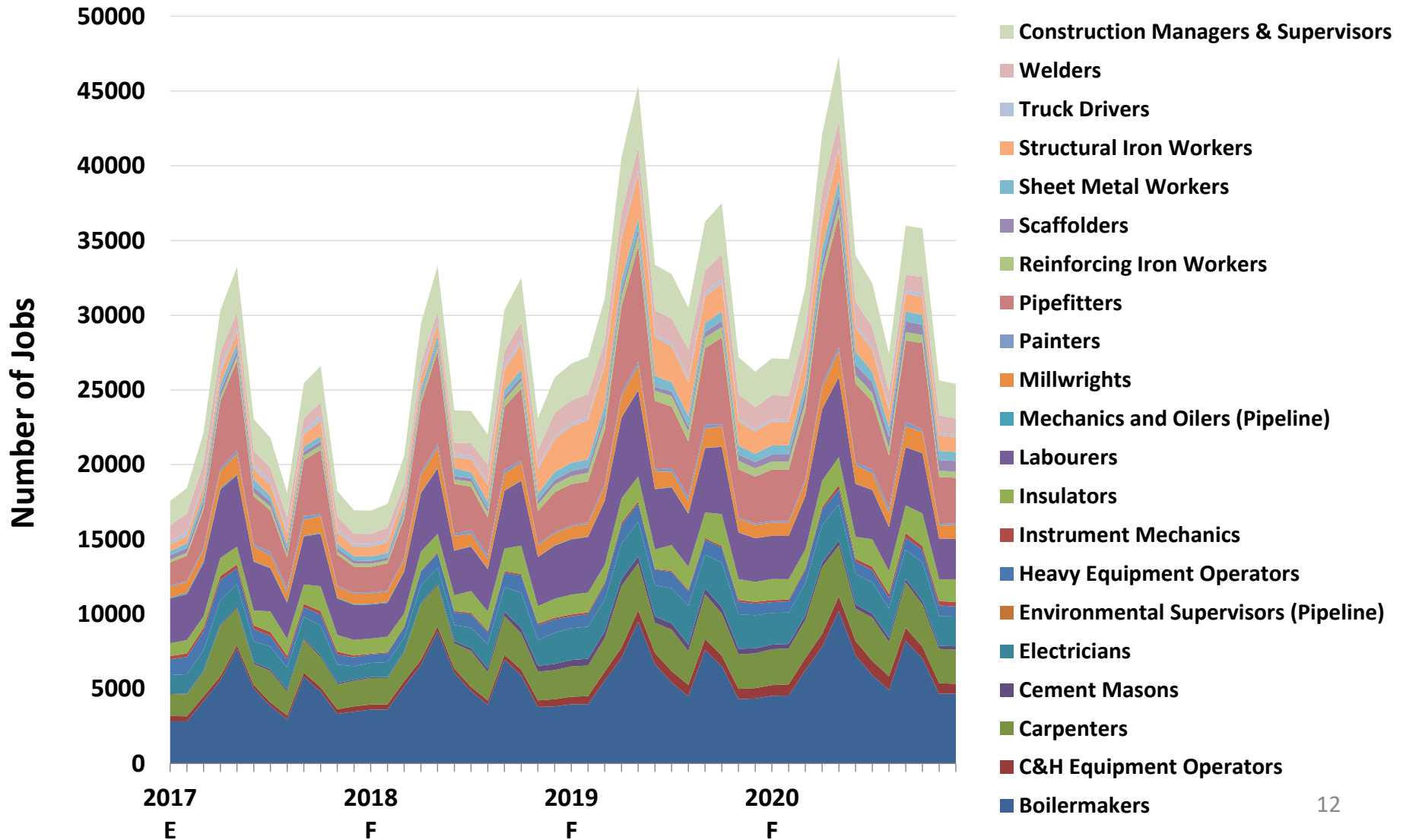
TOTAL PROJECT COUNT – HISTORY



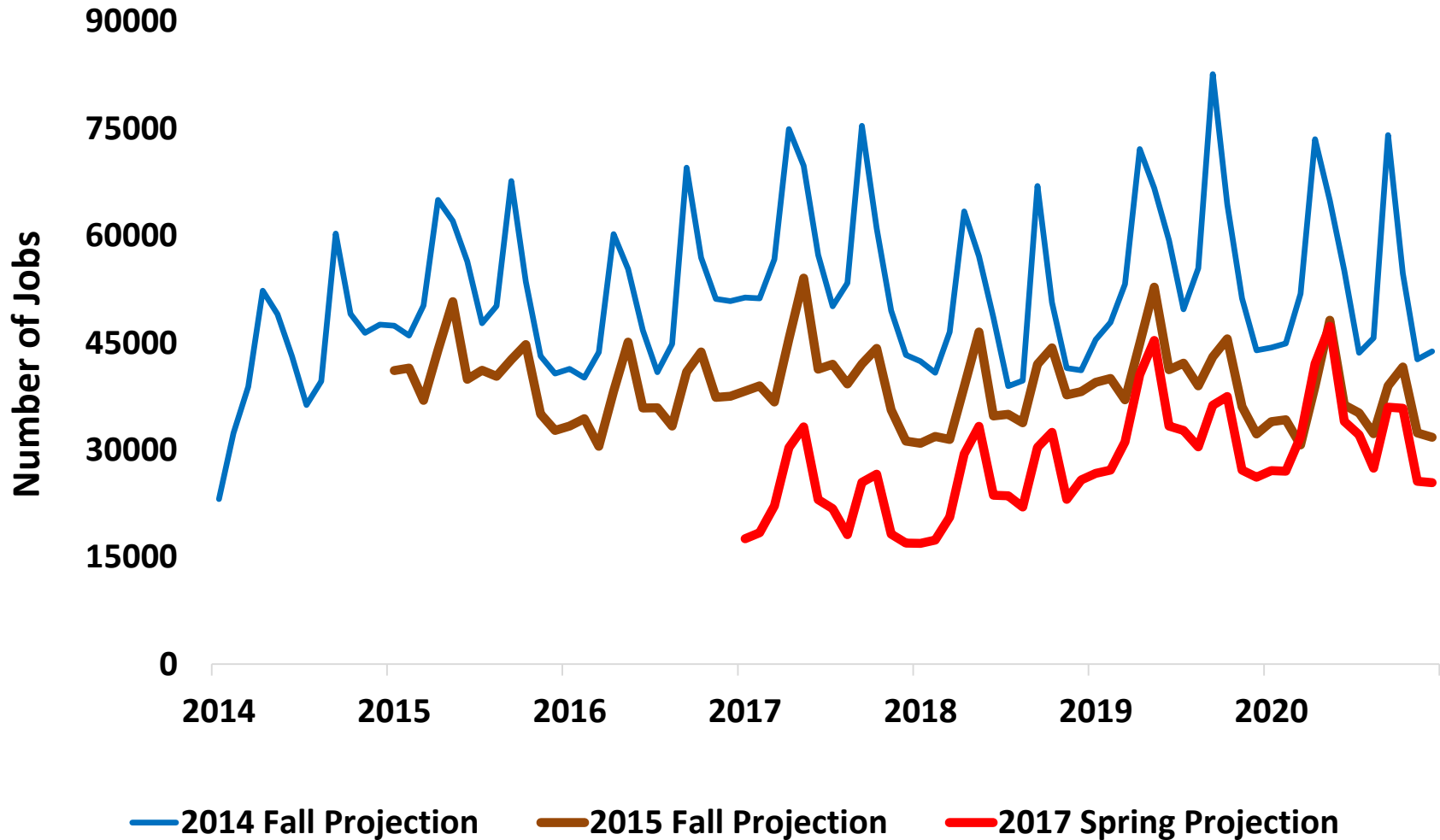
HEAVY INDUSTRIAL CONSTRUCTION AND MAINTENANCE WORKFORCE DEMAND PROJECTION TO 2020 – BY SECTOR



HEAVY INDUSTRIAL CONSTRUCTION AND MAINTENANCE WORKFORCE DEMAND PROJECTION TO 2020 – BY OCCUPATION

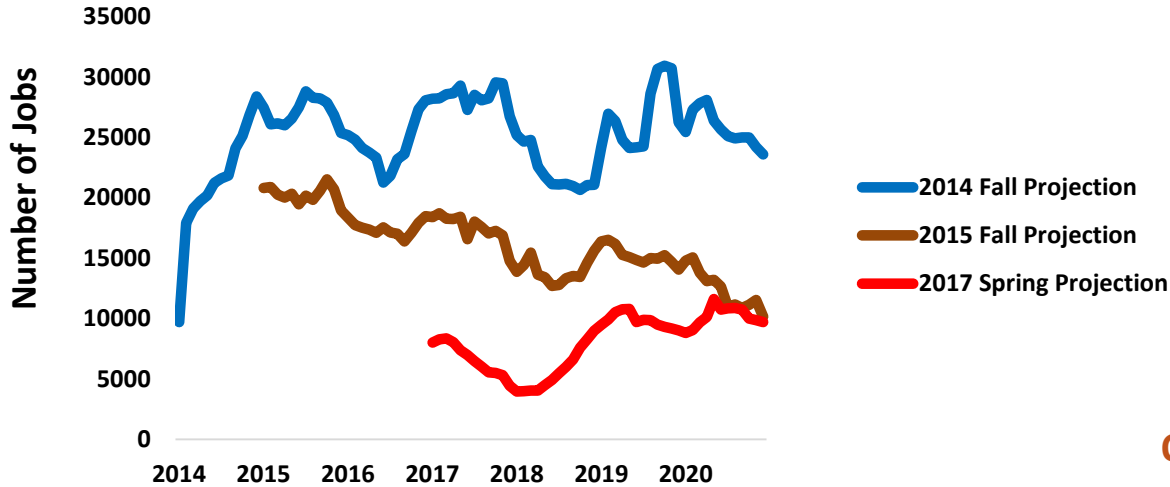


HEAVY INDUSTRIAL CONSTRUCTION AND MAINTENANCE WORKFORCE DEMAND PROJECTION TO 2020 – TOTAL

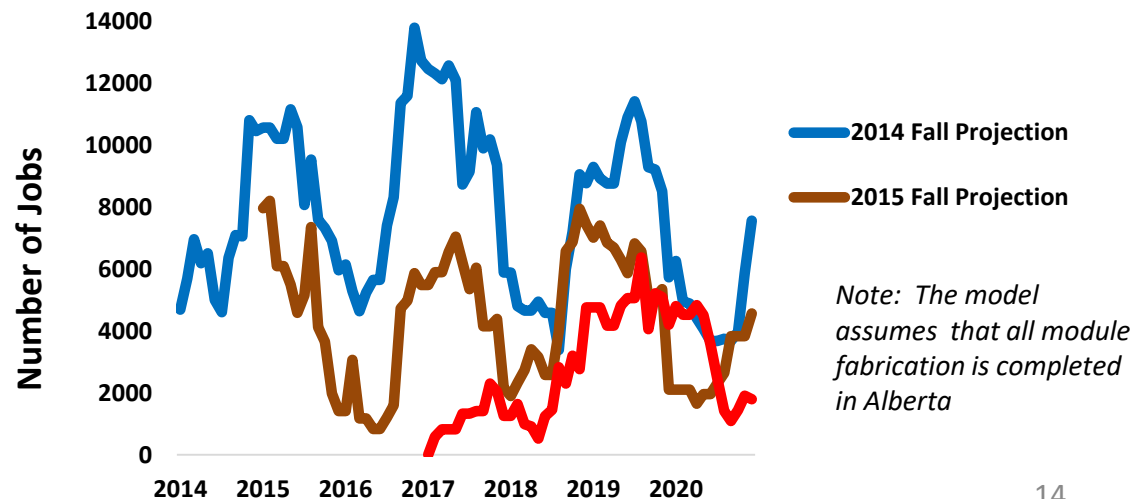


HEAVY INDUSTRIAL CONSTRUCTION WORKFORCE DEMAND PROJECTION TO 2020 – ON-SITE AND OFF-SITE

On-Site Construction

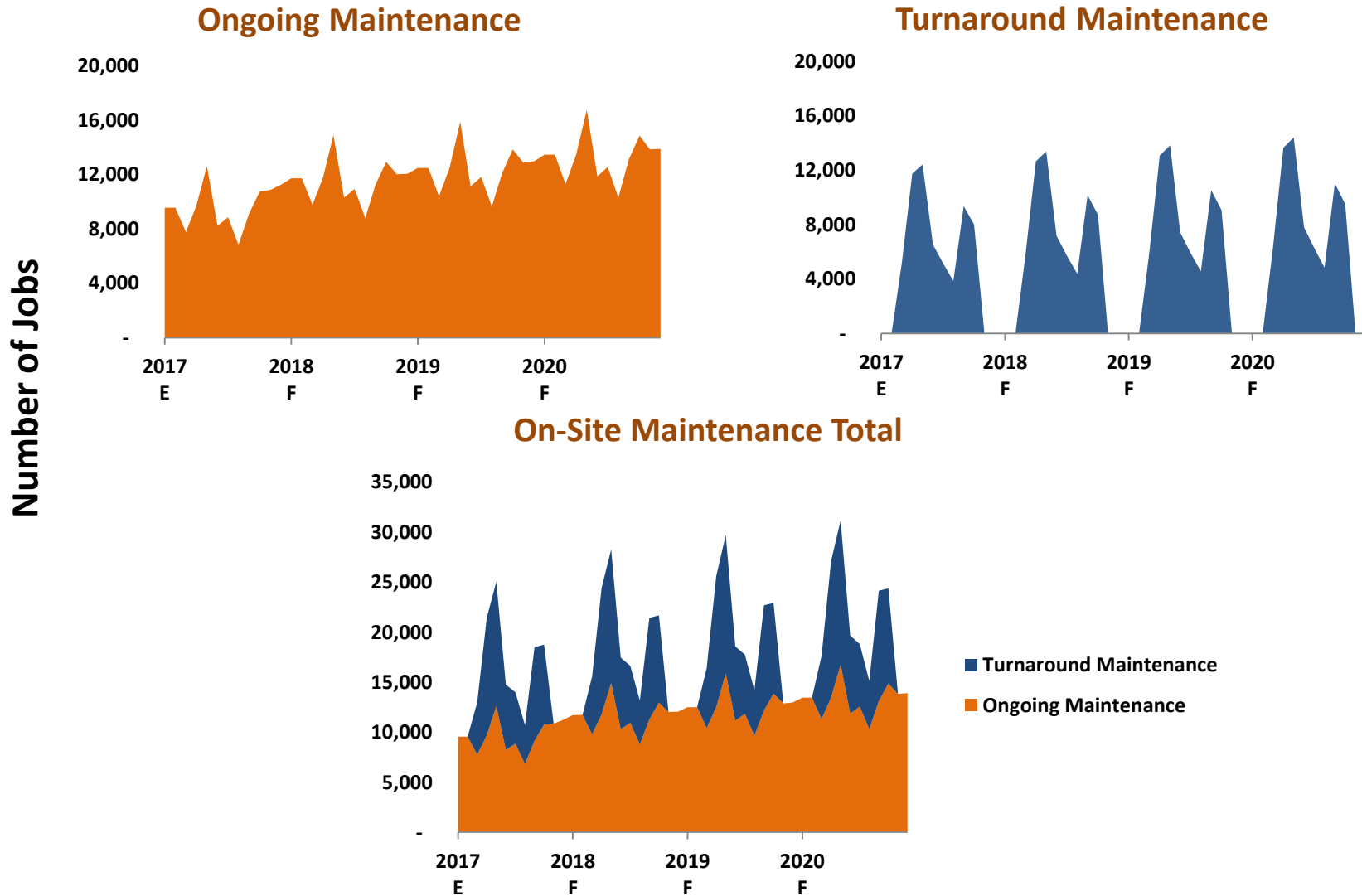


Off-Site Module Construction



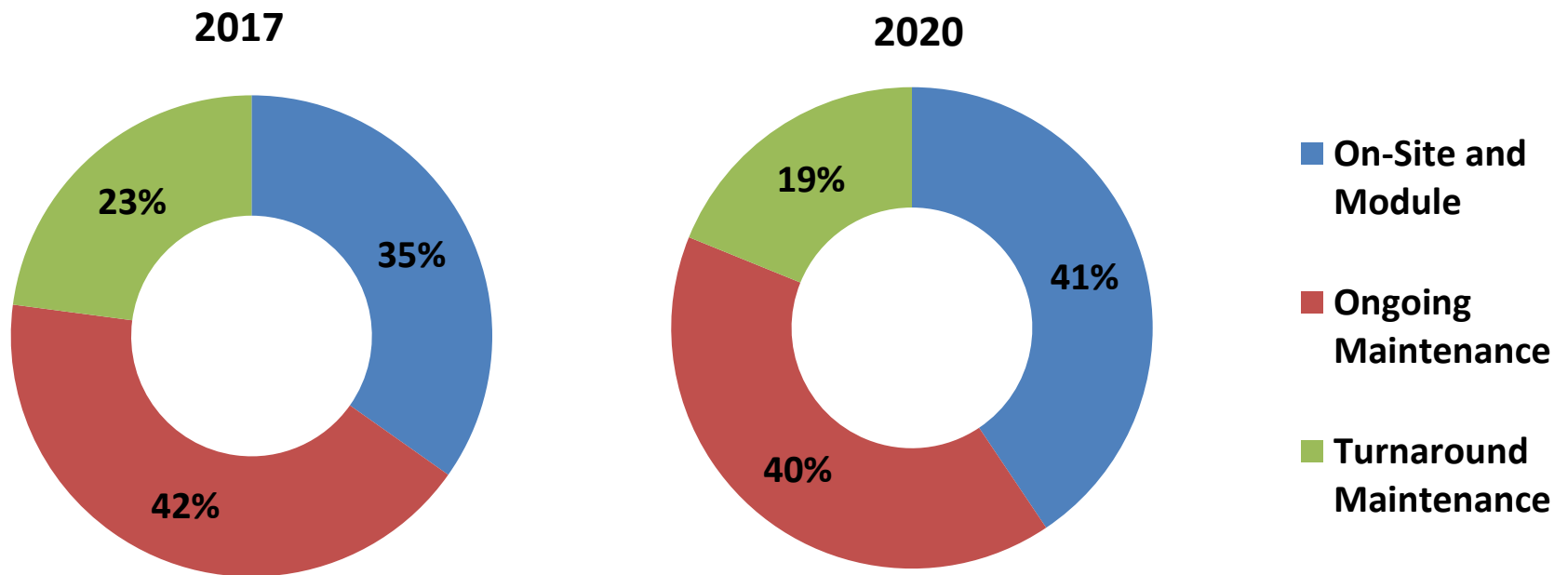
Note: The model assumes that all module fabrication is completed in Alberta

HEAVY INDUSTRIAL MAINTENANCE WORKFORCE DEMAND PROJECTION TO 2020 – ONGOING AND TURNAROUND

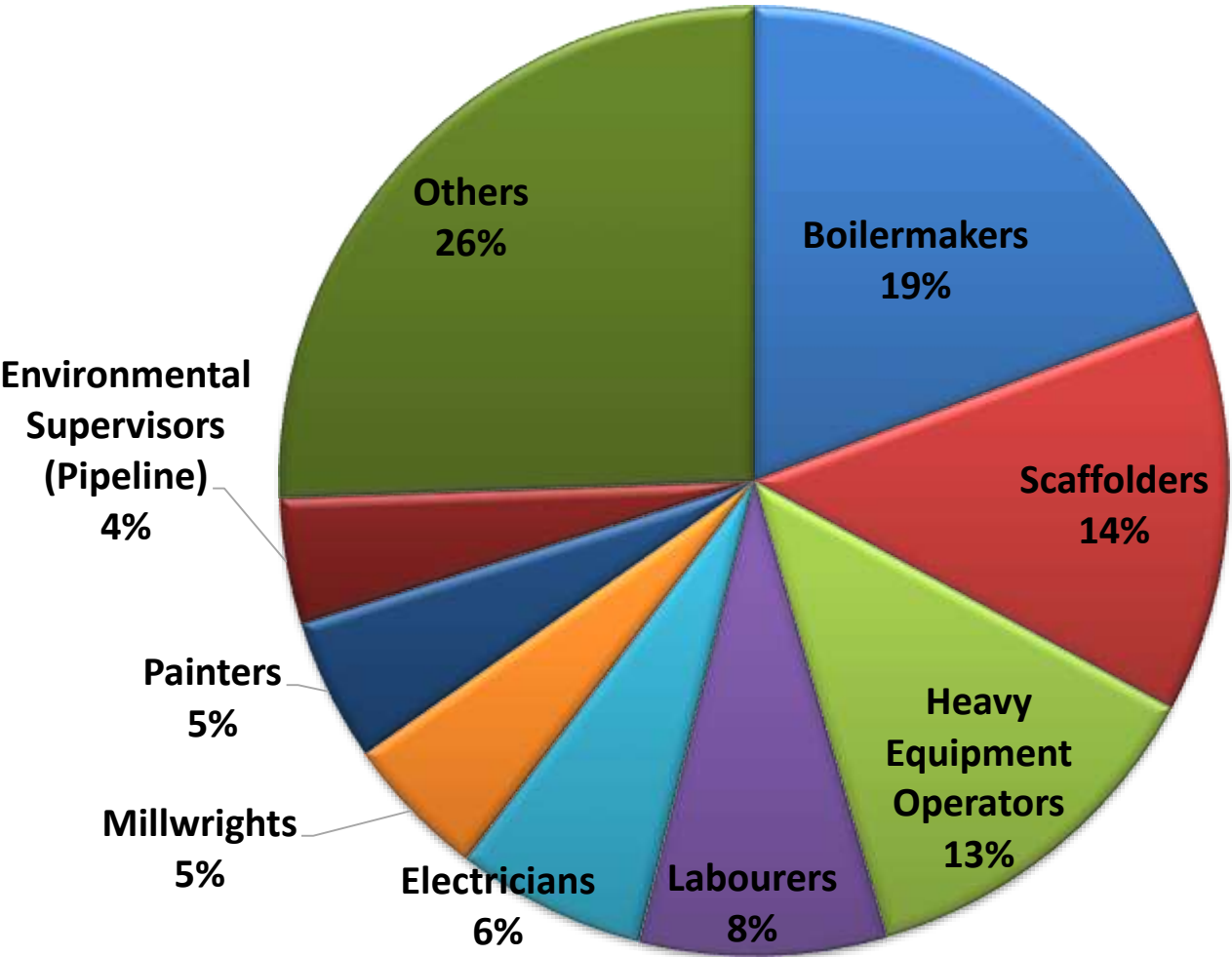


HEAVY INDUSTRIAL CONSTRUCTION AND MAINTENANCE WORKFORCE DEMAND PROJECTION TO 2020 - BY TYPE OF PROJECT

Distribution of Workforce Projection by Type of Project



HEAVY INDUSTRIAL CONSTRUCTION AND MAINTENANCE WORKFORCE DEMAND PROJECTION TO 2020 - DISTRIBUTION BY OCCUPATION (2017-2020)



NEXT FORECAST UPDATE

- **The next forecast will be completed in May 2018.**
- **Data gathering will take place from February to April with the target to complete the forecast by May.**
- **GOA is establishing an on-line data collection tool for this survey to streamline the process.**
- **Employers will have the ability to update their project information in an easier, more efficient and secure environment.**
- **GOA will be contacting all contributors in February 2018 to provide information on how to access this new system.**