INFRASTRUCTURE

MINING & METALS

NUCLEAR, SECURITY & ENVIRONMENTAL

OIL, GAS & CHEMICALS

BGCAPP: Preliminary Transition Analysis

8 August 2019

Objective and Key Findings

The Blue Grass Chemical Agent Destruction Pilot Plant (BGCAPP) began destroying chemical weapons in 2019, with an expected operational timeline until 2023 when the facility closes. The objective was to gain additional insight into transitioning key skills and opportunities of BGCAPP workers to help advance a comprehensive economic development plan for Madison County.

Summary of Key Findings

- **Environmental Science professionals will be more challenged than Plant and System Operators**. The strong demand for environmental professionals is somewhat connected to BGCAPP. While this creates short-to-medium opportunity, the longer term prospects may be less promising given this relationship to BGCAPP. In and around of Madison County, the frequency and intensity of demand for this profession is already low and will likely to be lower after decommissioning. Conversely, there are more opportunities for plant and system operators, as the concentration of this profession is stronger outside of Madison County in other metropolitan areas. In either case, the outlook for Madison County may be precarious because of the potential exodus of these professionals. Compounding this is the steady decline of manufacturing jobs in Madison County, which tend to be closely related to plant and system operators.

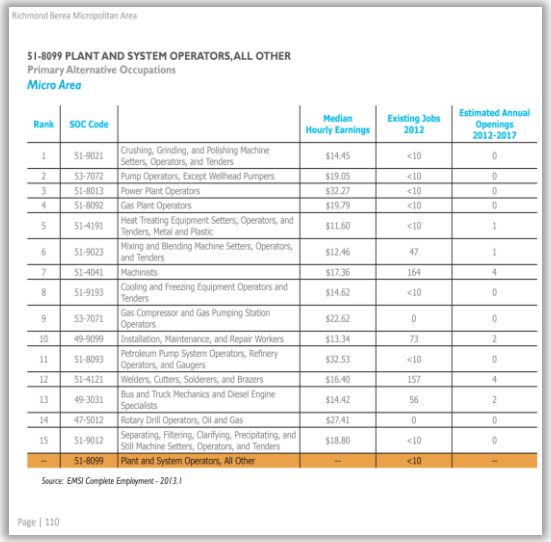
- **The transition requires a whole-of-industry approach**. By and large, BGCAPP has helped to shape Madison County. Key enablers like employment, services, and education are to a certain degree linked to BGCAPP. Of the 2,647 degrees awarded by Eastern Kentucky University (2017-2018), 135 were for engineering/technology concentrated in industrial safety, followed by biomedical (68) and physical sciences (66). Health-related degrees were much larger – medical doctors and nursing. These are indicative of key industries and demand pull. Reusing the BGCAPP assets for data centers, for example, may not absorb the majority of plant and system operators or environmental professionals. Anecdotal evidence shows that local job creation tends to be limited (e.g., Google data centers have 150 employees on average) and focus on administrative services. Tech companies are inclined to bring outside technical experts to operate the center. Whether a data center or other industry, it's critical for Madison County to also transition its contextual enablers like university degrees and technical specializations to attract these companies and develop local jobs. Moreover, industry diversification that can reuse the BGCAPP assets should be a long-term strategy to futureproof against the downturns of transitions.

Methodology

❶ Using the *2013 Layoff Aversion Study*, occupations and descriptions from the "Primary Alternative Occupations" list were analyzed with the assistance of machine-learning tools. To make the study more timely, data on relevant job postings were collected from 1 July 2018 to 30 June 30 2019.

❷ Keywords from the Primary Alternative Occupations were coded into the search function in order to pull together relevant data and information on relevant jobs, positions, and opportunities in Kentucky.

❸ 1,319 data sources were then collected and collated with regard to the Primary Alternative Occupations.



Richmond Berea Micropolitan Area

51-8099 PLANT AND SYSTEM OPERATORS,ALL OTHER

Primary Alternative Occupations

Micro Area

Rank	SOC Code		Median Hourly Earnings	Existing Jobs 2012	Estimated Annual Openings 2012-2017
1	51-9021	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	$14.45	<10	0
2	53-7072	Pump Operators, Except Wellhead Pumpers	$19.05	<10	0
3	51-8013	Power Plant Operators	$32.27	<10	0
4	51-8092	Gas Plant Operators	$19.79	<10	0
5	51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	$11.60	<10	1
6	51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	$12.46	47	1
7	51-4041	Machinists	$17.36	164	4
8	51-9193	Cooling and Freezing Equipment Operators and Tenders	$14.62	<10	0
9	53-7071	Gas Compressor and Gas Pumping Station Operators	$22.62	0	0
10	49-9099	Installation, Maintenance, and Repair Workers	$13.34	73	2
11	51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	$32.53	<10	0
12	51-4121	Welders, Cutters, Solderers, and Brazers	$16.40	157	4
13	49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	$14.42	56	2
14	47-5012	Rotary Drill Operators, Oil and Gas	$27.41	0	0
15	51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	$18.80	<10	0
--	51-8099	Plant and System Operators, All Other	--	<10	--

Source: EMSI Complete Employment - 2013.1

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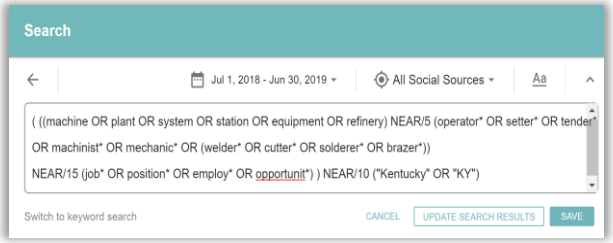
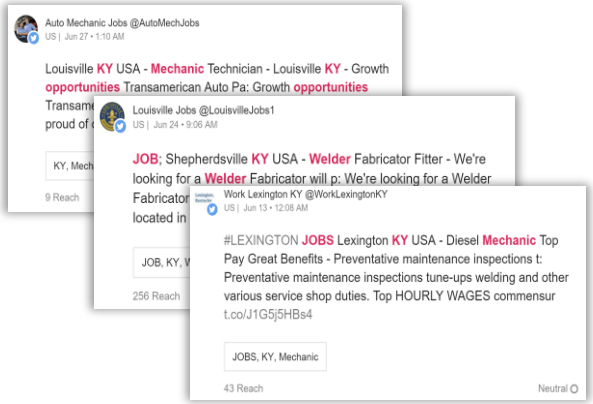
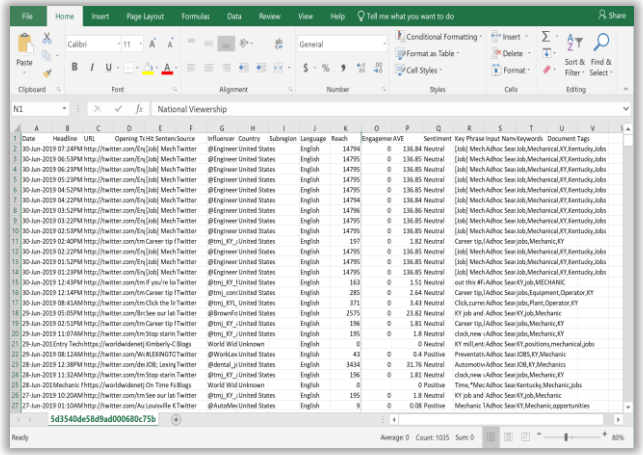
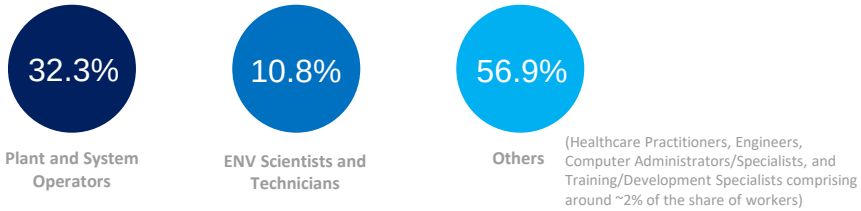






While **manufacturing** is currently the largest private sector employer in Madison County (MC), the trend shows a steady decline in 2018. Manufacturing jobs by and large are closely associated with the largest share of BGCAPP employees (**plant and system operators**). However, other sectors are showing steady growth. Professional/technical jobs has increased by 26% since Jan 2017 while Admin/waste services increased by 38%.

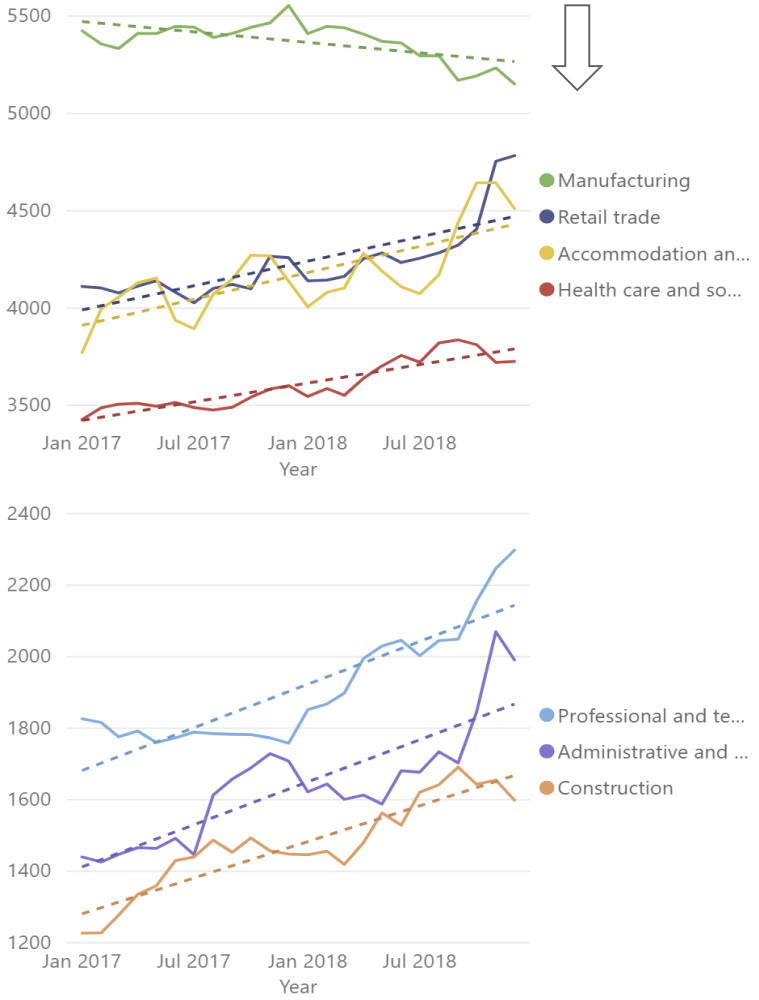
BG Operational Phase Workforce



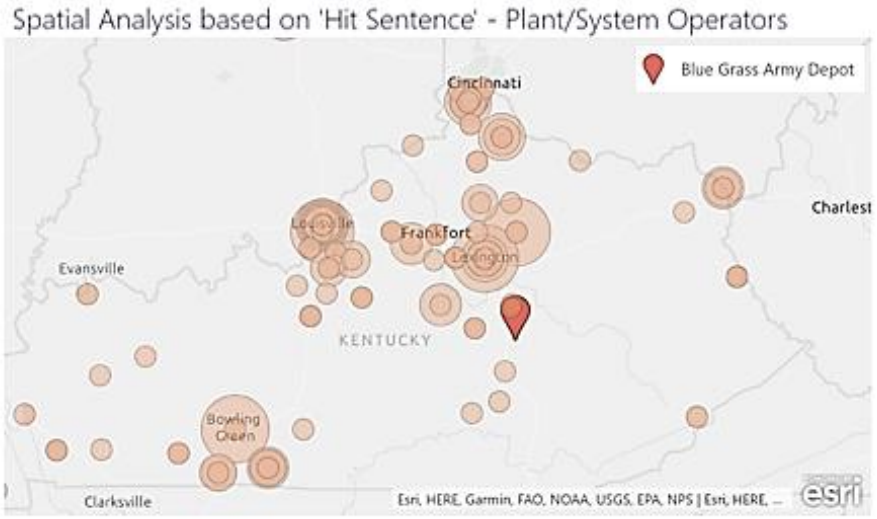
Private Sector Average Employment by Industry (2017-2018)

Source: *U.S. Department of Labor Quarterly Census of Employment and Wages*

Private Sector Employment Trend



Plant and system operators as a profession has increased by 83.3% since July 2018. However, the growth or demand pull is occurring outside of MC and forecasted to strengthen in frequency and intensity in other metropolitan areas.



Plant and System Operators (the largest share of BGCAPP's current operational workforce) tend to be heavily concentrated around metropolitan centers like Bowling Green, with very few within proximity to the BGCAPP.

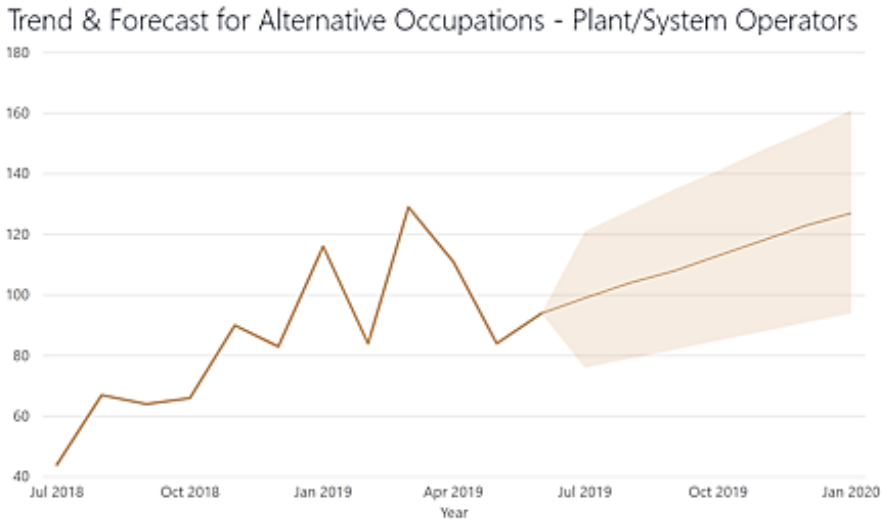
85%

Likelihood that plant and system operators will increase outside of MC in other towns.

≥ 61% = very likely to occur

50-60% = likely to occur

≤ 49% = very unlikely to occur



Not surprisingly**, Environmental Science** as a profession has increased by 82%. This is due in part by the needs and requirements from BGCAPP. These are more specialized compared to Plant and Systems Operators; hence the overall volume of growth and demand is less.

Spatial Analysis based on 'Hit Sentence' - Environmental Science

Since much of the concentration is around MC and linked to BGCAPP, it is likely that we would see a downward trend in and around MC as the decommissioning comes to an end in 2023.

95%

Likelihood that Environmental Science (technicians, consultants, scientists) will increase in and around MC. *Noteworthy, this prediction is based on the current state of BGCAPP and not the overall end state.*

≥ 61% = very likely to occur

50-60% = likely to occur

≤ 49% = very unlikely to occur

Trend & Forecast for Alternative Occupations - Environmental Science