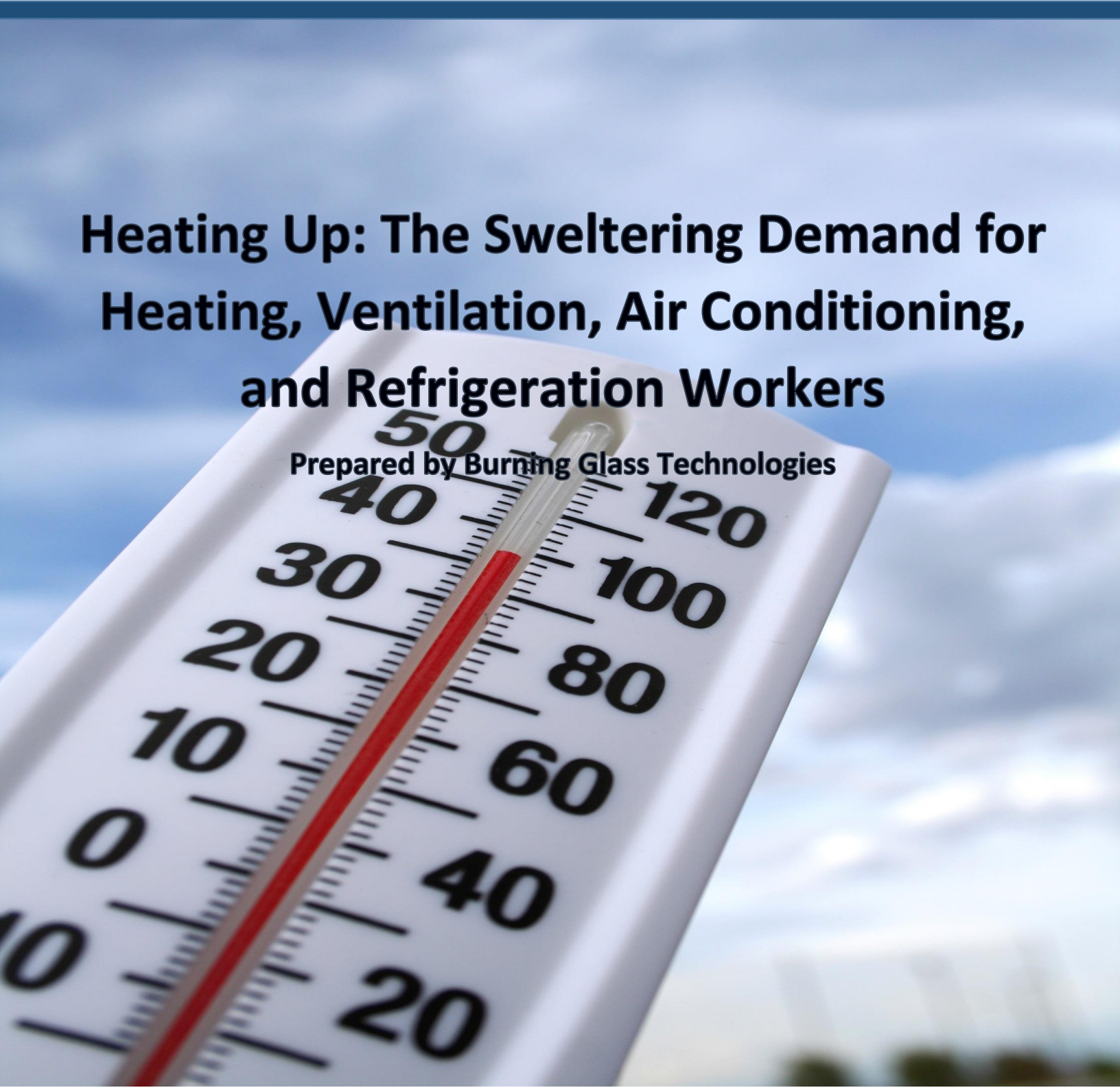

Heating Up: The Sweltering Demand for Heating, Ventilation, Air Conditioning, and Refrigeration Workers

Prepared by Burning Glass Technologies

July 2015

HVACR WORKFORCE DEVELOPMENT FOUNDATION

burningglass CAREERS IN FOCUS

INTRODUCTION

The Heating, Ventilation, Air Conditioning, and Refrigeration (HVACR) industry is the quiet gatekeeper to our personal comfort. We take for granted that we can live and work comfortably year-round in all climates, and we take for granted that our perishable foods will remain properly refrigerated. But we may not be able to take these for granted much longer. As the economy hits full stride coming out of the Great Recession, the pace of new construction is quickening and, in turn, the demand for new HVACR infrastructure is poised to spike. This is bringing demand for skilled HVACR workers to a swelter – the Bureau of Labor Statistics (BLS) estimates that the number of HVACR Mechanic and Installer jobs will increase by 21% through 2022, nearly twice the growth of employment overall[1] – and most of these jobs are strong middle-skill positions that can't be outsourced or replaced by technology. However, as strong as demand is for HVACR workers, the supply of trained HVACR talent is struggling to keep pace.

Despite its importance to the nation's economy, HVACR talent is scarce. Middle-skill HVACR jobs – i.e., jobs that are open to workers without a bachelor's degree – take 12% longer to fill than all middle-skill jobs nationwide, and positions for Refrigeration Technicians – one of the core HVACR roles – take longer to fill than any other middle-skill occupation, period. With respect to HVACR talent, many factors are driving a wedge between supply and demand – such as an aging and retiring workforce, increased demand for HVACR infrastructure, and a lack of interest among young workers entering the labor force. Moreover, a dearth of comprehensive and quantifiable information about the HVACR hiring landscape has made it difficult to properly track the severity of this problem. This has created an information gap that affects all HVACR employers, educators, workers, and students, and this information gap is exacerbating the skills gap in HVACR roles.

In order to close this information gap and prevent the existing skills gap in HVACR roles from widening, Burning Glass Technologies and the HVACR Workforce Development Foundation conducted an analysis of employer demand across the HVACR hiring landscape in the U.S. This is part of a larger research initiative undertaken by the HVACR Workforce Development Foundation investigating the supply and demand dynamics of HVACR jobs in the U.S. and Canada. In particular, Burning Glass and the HVACR Workforce Foundation sought to understand the opportunities available for HVACR workers and address the unique issues constraining the pipeline of talent for HVACR roles.

In order to accomplish this, Burning Glass conducted three separate analyses:

1) A scan of the existing HVACR Maintenance and Installation workforce;

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[1] "Heating, Air Conditioning, and Refrigeration Mechanics and Installers." U.S. Bureau of Labor Statistics. U.S. Bureau of Labor Statistics, 8 Jan. 2014. <http://www.bls.gov/ooh/installation-maintenance-and-repair/heating-air-conditioning-and-refrigeration-mechanics-and-installers.htm>.

2) A scan of current employer demand for HVACR workers;
3) An analysis of the gap between supply and demand for HVACR talent.

Using Burning Glass' comprehensive proprietary database of online job postings as well as BLS data, this report provides an overview of the HVACR labor market across multiple industries and occupations. It starts with an overview of the size and projected growth of the HVACR Mechanic and Installer workforce. It then breaks down current employer demand for HVACR workers by region, skill level, and occupation. Finally, it investigates the skills gap for HVACR talent and the forces that might be driving it.

METHODOLOGY

Many HVACR jobs are in hidden pockets of the job market, and are not visible in U.S. government labor market data. The BLS tracks employment for HVACR Mechanics and Installers, but this does not capture the engineers designing HVACR systems, the production workers making the equipment, the general maintenance workers who need knowledge of HVACR technology, the sales representatives selling HVACR products, or the warehouse workers storing and transporting HVACR equipment for wholesale distributors, to name just a few. As a result, Burning Glass mined real-time labor market data from its database of nearly 100 million job postings and built a custom definition to identify jobs residing across the broader HVACR landscape.

For the purpose of this report, HVACR jobs were defined as those that require familiarity with HVACR products and services – from HVACR installation and maintenance to system design, manufacturing, and sales – or jobs that directly support companies in the HVACR industry. A job was deemed an HVACR job if it met a specific set of HVACR-related criteria in one of the following fields:

- Skills (e.g., Heat Pump Installation; Air Conditioner Installation; Heating Efficiency)
- Certifications (e.g., Master HVACR License, EPA 608 Certification)
- Industries (e.g., Plumbing, Heating, and Air Conditioning Contractors; Heating Equipment Manufacturing; Heating and Air Conditioning Equipment Wholesale Distributors)
- Occupations (e.g., HVAC Mechanics and Installers; Refrigeration Mechanics and Installers)
- Job Titles (e.g., Refrigeration Technician)

Jobs in the HVACR landscape were categorized according to their skill level. Low-skill jobs were defined as those predominantly requiring no postsecondary education. Middle-skill jobs were defined as those that are traditionally open to sub-baccalaureate workers yet require some postsecondary training, such as an associate's degree or significant on-the-job training. High-skill jobs were defined as those open almost exclusively to workers with at least a bachelor's degree.

Finally, in order to investigate the differences in skills gap by state, Burning Glass researched HVACR mechanics' licensing requirements in all 50 states and Washington, D.C. Burning Glass identified key differences in licensing requirements and distilled this information into a dataset for further analysis. The list of detailed licensure requirements by state is in Appendix 4.

THERE ARE MORE HVACR JOBS THAN FIRST THOUGHT…AND THEY ARE EVERYWHERE

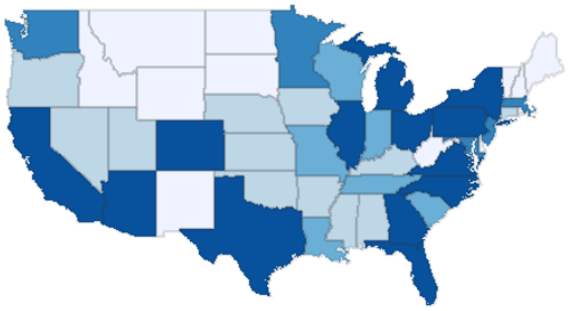
In 2012, the U.S. Bureau of Labor Statistics (BLS) estimated that 267,600 people worked as HVACR Mechanics and Installers.[2] However, using its more comprehensive definition Burning Glass found 220,734 *openings* for HVACR jobs for the full year 2014. Since new job openings constitute only a portion of the existing HVACR workforce, this finding reveals that demand for HVACR workers is far stronger than BLS estimates suggest.

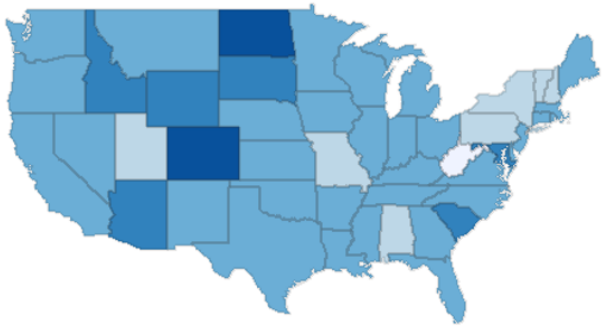
Furthermore, HVACR jobs are open throughout the United States. As the maps in Figure 1 show, HVACR jobs exhibit strong demand across all states, both by total postings and by location quotient.[3]

Figure 1: HVACR Demand by State

Total Job Postings →

On a total postings basis, California, Texas, and Florida have the greatest demand for HVAC workers. However, states across the country show strong opportunities in HVAC roles.





←Job Postings by Location Quotient

Ranked by location quotient, there is robust demand for HVAC workers across the U.S. This suggests that HVAC skills offer strong geographic portability.

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2 "Heating, Air Conditioning, and Refrigeration Mechanics and Installers." U.S. Bureau of Labor Statistics. U.S. Bureau of Labor Statistics, 8 Jan. 2014. <http://www.bls.gov/ooh/installation-maintenance-and-repair/heating-air-conditioning-and-refrigeration-mechanics-and-installers.htm>.

3 Location Quotient is defined as the ratio of HVACR postings per employed worker in each state to HVACR postings per employed worker nationally. A location quotient higher than 1 indicates that demand for HVACR workers in the state is more concentrated than nationally; a location quotient below 1 indicates that demand is less concentrated in the state.

Thus, HVACR workers can rest assured that their skills will be valuable across the U.S. The same cannot be said for many other middle-skill jobs – such as Oil and Gas jobs – which are often clustered around specific geographic regions – in particular, Texas and North Dakota. See Appendix 2 for a detailed state-by-state comparison of HVACR demand.

HVACR JOBS OFFER STRONG OPPORTUNITIES FOR MIDDLE-SKILL WORKERS

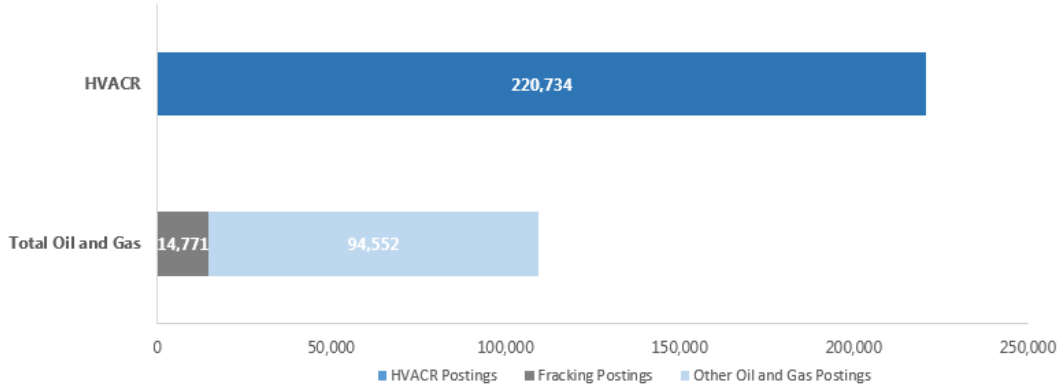
In 2014, 70% of HVACR jobs were in middle-skill occupations that are traditionally open to workers without a bachelor's degree, compared to only 20% of HVACR postings in high-skill occupations and 10% in low-skill occupations. On average, these HVACR middle-skill occupations offered strong average advertised salaries of $49,259.

Table 1: Top HVACR Occupation Families

	HVACR Postings: 2014	% of HVACR Postings: 2014	Average Advertised Salary
Overall	220,734	100%	$50,511
High Skill	43,845	20%	$65,183
Middle Skill	154,802	70%	$49,256
Low Skill	22,087	10%	$41,636

These findings suggest that HVACR jobs are an excellent opportunity for middle-skill workers. To put the magnitude of demand for HVACR workers into context, HVACR jobs were posted at twice the rate of jobs in the Oil and Gas industry – another sector often cited as a prime target for middle-skill workers.

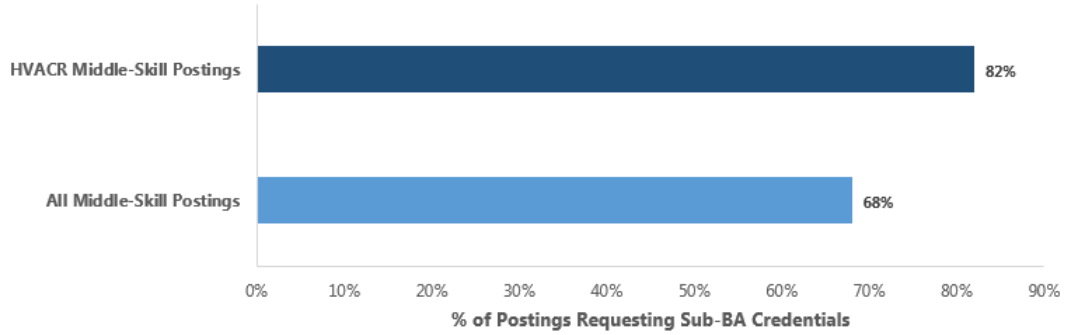
Figure 2: Total HVACR Postings Compared to Oil and Gas



HVAC JOBS RESIST UPCREDENTIALING

A common dynamic in the middle-skill labor market is that employers are seeking baccalaureate candidates for occupations that traditionally have not required a bachelor's degree.[4] For example, only 14% of currently employed Maintenance and Installation Supervisors possess a bachelor's degree, but 48% of postings for this role request at least a bachelor's. Despite this pressure of upcredentialing for Maintenance and Installation Supervisors and other historically middle-skill roles, Burning Glass found that 82% of middle-skill jobs in the HVACR landscape were still open to workers without a bachelor's degree, compared to 68% of middle-skill jobs nationally. This suggests that HVACR roles are resisting the trend of upcredentialing and will remain strong targets for sub-baccalaureate workers.

Figure 3: Middle-Skill Sub-BA Postings



HVACR JOBS BREAK INTO A DIVERSE MIX OF ROLES, AND REQUIRE DIVERSE SKILL SETS

Importantly, HVACR jobs exist across a range of occupation types. An analysis of the occupation families within the HVACR landscape shows that a sizeable portion of HVACR jobs also exist in the Architecture and Engineering, Sales, Production, Office and Administrative Support, and Transportation and Material Moving occupation families. These roles support key functions at HVACR manufacturers, wholesale distributors, contractors, and other firms across the HVACR supply chain, and this analysis underscores the strong opportunities in HVACR for workers across functional domains.

[4] Burning Glass, "Moving the Goalposts: How Demand for a Bachelor's Degree is Reshaping the Workforce," September 2014. http://burning-glass.com/media/4737/Moving_the_Goalposts.pdf.

Table 2: Top HVACR Occupation Families

Occupation Family	Total Postings
Installation, Maintenance, and Repair	104,233
Architecture and Engineering	24,701
Construction	14,753
Sales and Related	12,506
IT	9,534
Production	9,002
Office and Administrative Support	8,303
Transportation and Material Moving	6,237
Business and Financial Operations	5,655
Building and Grounds Cleaning and Maintenance	5,338

Given the broad array of occupations within the HVACR landscape, it is no surprise that HVACR employers request a diverse set of skills. An analysis of the skills employers request in job postings shows that HVACR jobs require familiarity with HVACR, Electrical, and Plumbing skills, tools, and technologies. However, software skills – such as Microsoft Excel and engineering software such as AutoCAD – are also important in the HVACR landscape.

Table 3 shows the key skills and skill groups requested across the HVACR landscape. These skills represent the competencies that job seekers and educators can focus on to prepare for careers in HVACR. Moreover, employers can broaden their talent pipeline by identifying workers within their companies that already possess many of the skills required for roles across their organizations. For example, Maintenance Technicians possess many of the same HVACR and Installation, Maintenance, and Repair skills that HVAC Mechanics and Installers require, suggesting that Maintenance Technicians may represent untapped talent who can be upskilled to qualify for HVACR Mechanic and Installer jobs.

Table 3: Key HVACR Skills

Skill Group	Key Skills		Key HVACR Occupations Requesting Skill Group
HVACR	• Boilers • Ventilation Systems • Cooling Towers • Air Quality Control	• Heating Systems • Heat Exchange • Boiler Operation • Condensers	• HVAC Mechanic / Installer • Refrigeration Technician • Maintenance Technician • Stationary Engineer / Boiler Operator • Mechanical Engineer
Installation, Maintenance, & Repair	• Facility Maintenance • Carpentry • Painting • Blueprints	• Power Tools • Welding • Schematic Diagrams • Soldering	• Maintenance Technician • Maintenance / Service Supervisor • HVAC Mechanic / Installer • Refrigeration Technician • Repair Worker / Service Technician
Electrical	• Electrical Systems • Wiring • Cabling • Electrical Schematics	• Wiring Diagrams • Electrical Wiring • Transformers • Electrical Fixtures	• HVAC Mechanic / Installer • Electrician • Electrical Engineer • General / Electrical Engineering Technician
Plumbing	• Water Heaters • Piping Systems • Water Distribution • Pipefitting	• Pipe Cutters • Valve Installation • Drain Cleaning • Plumbing License	• Plumber • Pipe Fitter • Construction Worker • Maintenance Technician
Energy Efficiency & Environmental	• Energy Management • Water Treatment • Energy Conservation • Material Safety Data Sheets (MSDS)	• Energy Efficiency • Leadership in Energy and Environmental Design (LEED) • Hazardous Waste • Environmental Health and Safety	• Engineering Manager • Mechanical Engineer • Energy Engineer • Stationary Engineer / Boiler Operator • HVAC Mechanic / Installer
Engineering	• Mechanical Engineering • Electrical Engineering • System Design • Power Distribution	• Engineering Design • Chemical Engineering • Mechanical Design • Engineering Management	• Mechanical Engineer • Electrical Engineer • Engineering Manager • Mechanical / Electrical Drafter
Software	• Excel • AutoCAD • Computer Aided Drafting/Design (CAD) • Word Processing	• SAP • Revit • Computer Aided Manufacturing (CAM) • Oracle	• Mechanical Engineer • Mechanical / Electrical Drafter • Electrical Engineer • Facilities Manager • Software Developer / Engineer

Similarly, there are a few key certifications that are requested across the HVACR landscape. HVAC Technician Certification, EPA Certification, and Refrigeration Certification are the core certifications requested in postings for HVACR roles, and as sustainable and energy efficient building design becomes more common employer demand for Leadership in Energy and Environmental Design (LEED) certification has also become more prevalent. Table 4 shows the key HVACR occupations commonly requesting each of these certifications.

Table 4: Key HVACR Certifications

Certification	Key HVACR Occupations Requesting Certification
HVAC Technician Certification	• HVAC Mechanic / Installer • Repair Worker / Service Technician • Maintenance Technician • Refrigeration Technician
EPA Certification	• HVAC Mechanic / Installer • Maintenance Technician • Refrigeration Technician • Mechanical Engineer
Refrigeration Certification	• Refrigeration Technician • Maintenance Technician • HVAC Mechanic / Installer • Repair Worker / Service Technician
LEED Certification	• Mechanical Engineer • Facilities Manager • Civil Engineer • Energy Engineer

HVACR TALENT IS IN SHORT SUPPLY

Across the HVACR landscape, employers are struggling to fill jobs. On average, HVACR jobs remain open for 34 days, which is slightly longer than the national average of 33 days. However, postings for middle-skill HVACR jobs – which constitute the bulk of HVACR openings – remained open 12% longer than middle-skill jobs nationally. This suggests that the demand for middle-skill HVACR workers outstrips the supply, causing employers to struggle filling key HVACR roles.

Table 5: Posting Duration by Skill Level

Skill Level	Average HVAC Posting Duration	Average National Posting Duration
High Skill	37 Days	36 Days
Middle Skill	33 Days	29 Days
Low Skill	33 Days	30 Days

Moreover, the core HVACR Installation, Maintenance, and Repair occupations are among the most difficult to fill in the United States. As Table 6 shows, HVACR Mechanic and Installer Jobs have the 11th longest posting duration of all middle-skill jobs, while, on average, Refrigeration Technician postings remain open longer than *any other* middle-skill occupation. This points to a grave undersupply of talent that has created a skills gap for the most critical of HVACR positions.

Table 6: Hardest-to-Fill Middle-Skill Occupations

Rank	Occupation	Average Posting Duration
1	**Refrigeration Technician**	**44 Days**
2	Broadcast Technician	44 Days
3	Neurodiagnostic Technician	43 Days
4	Electrical Designer	42 Days
5	Mechanical Engineering Technician	40 Days
6	Avionics Technician	40 Days
7	Engineering Technologist	39 Days
8	Occupational Therapy Assistant	37 Days
9	Medical Coder	37 Days
10	Network / Systems Support Specialist	36 Days
11	**HVAC Mechanic / Installer**	**36 Days**
–	**National Middle-Skill Average**	**29 Days**

INCONSISTENT LICENSURE REQUIREMENTS IMPACT HVACR HIRING

An inconsistent licensure landscape for HVACR roles may be widening the skills gap for these positions. Across the U.S., many states require that HVAC Mechanics and Refrigeration Technicians obtain a license from a state licensing board. Licensing requirements can be divided into the following categories: 1) None – no statewide license is required; 2) Technician – anyone performing HVACR work must obtain a license; 3) Contractor – companies employing HVACR workers must obtain a license; and 4) Both – HVACR Technicians and HVACR Contractors must obtain licenses.

Posting duration for HVAC Mechanics and Installers in states with licensing requirements is significantly higher than in states without (although the type of licensure does not significantly affect posting duration). This suggests that licensure requirements have a noticeable impact on the skills gap for key HVACR roles. See Appendix 4 for state-by-state details.

Table 7: Licensure's Impact on HVAC Mechanic and Installer Hiring Difficulty

Statewide License Required?	Average Posting Duration for HVAC Mechanics and Installers	Number of States*
Yes	37 Days	36
No	33 Days	15

*Includes District of Columbia

Many states with HVACR licensure laws allow out-of-state experience and credentials to count toward the requirements for their own licenses. Some states have such reciprocal agreements with a limited number of other states, while some will consider experience and credentials from

any state. An analysis of posting duration by type of reciprocal agreement reveals that states whose licensing process is open to all states actually have a lower posting duration than states with no licensing requirements at all. This suggests that state licensing boards may be able to help alleviate the skills gap in HVACR roles by allowing out-of-state experience and certification to substitute for a portion of their own HVACR license requirements.

Table 8: Posting Duration by Reciprocity Agreement

Reciprocity Agreement	Average Posting Duration for HVAC Technicians	Number of States*
No Reciprocal Agreements	40 Days	16
Specific List of States	37 Days	12
Open to All States	32 Days	6
Preferred List but Open to All States	31 Days	2
Unregulated	33 Days	15

*Includes District of Columbia

SUMMARY AND IMPLICATIONS

HVACR Is an Attractive Field for Middle-Skill Workers A large majority of HVACR jobs are open to sub-baccalaureate workers, and these jobs exhibit robust demand and provide strong living-wage salaries. Moreover, given HVACR jobs' resistance to upcredentialing, these jobs are likely to remain open to sub-baccalaureate workers. Finally, HVACR jobs are in demand across all states and across many occupation families. This suggests that HVACR skills are highly portable across geographic areas as well as job roles.

HVACR Employers Are Struggling to Fill Jobs HVACR jobs show evidence of a skills gap, particularly among middle-skill workers. While the skills gap is present in the HVACR landscape as a whole, it is highly pronounced in key HVACR maintenance and installation roles. This result suggests that students in HVACR training and education programs will likely have little trouble finding jobs upon graduation.

Licensing Requirements Impact the HVACR Skills Gap This analysis also provides evidence that the HVACR skills gap is exacerbated by inconsistent HVACR licensing requirements across states. Opening the door to out-of-state HVACR workers may significantly reduce the difficulty employers have hiring for HVACR workers, suggesting that policymakers should consider reducing the geographic barriers to employing HVACR talent.

Appendix 1: Occupation and Job Titles

Table A1: Top HVACR Occupations

Occupation	Total Postings
Maintenance Technician	32,713
HVAC Mechanic / Installer	25,279
Mechanical Engineer	9,272
Maintenance / Service Supervisor	9,045
Repair Worker / Service Technician	8,687
Automotive Service Technician / Mechanic	8,604
Facilities Manager	8,139
Sales Representative	4,667
Engineering Manager	3,945
Plumber	3,923
Refrigeration Technician	3,880
Janitor / Cleaner	3,464
Stationary Engineer / Boiler Operator	2,819
Diesel Mechanic	2,713
Laborer / Material Handler	2,563
Electrician	2,552
Electrical Engineer	2,433
Customer Service Representative	2,132
Office / Administrative Assistant	1,976
Construction Manager	1,785

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Appendix 1: Occupation and Job Titles (Continued)

Table A2: Top HVACR Job Titles Listed in Online Postings

Title	Total Postings
Maintenance Technician	19,720
HVAC Technician	8,244
Facilities Manager	7,741
Service Technician	6,177
Maintenance Mechanic	5,630
Maintenance Supervisor	5,241
HVAC Service Technician	4,132
Mechanical Engineer	3,595
Refrigeration Technician	3,538
Mechanic	3,412
Plumber	3,406
Maintenance Manager	2,825
HVAC Installer	2,719
Maintenance Worker	2,290
Maintenance Engineer	2,196
Building Engineer	1,976
HVAC Mechanic	1,889
Electrician	1,852
Custodian	1,826
Maintenance Assistant	1,554

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Appendix 2: HVACR State Posting Data

State	HVACR Postings	HVACR Postings Rank	HVACR Location Quotient[5]	HVACR Location Quotient Rank
Alabama	2,532	29	0.82	43
Alaska	1,296	40	2.41	1
Arizona	6,025	13	1.46	4
Arkansas	1,698	33	0.88	36
California	22,495	1	0.92	35
Colorado	8,396	6	2.20	2
Connecticut	2,583	26	0.95	31
Delaware	713	47	1.04	20
Florida	12,505	3	1.01	25
Georgia	6,401	12	0.99	27
Hawaii	1,085	41	1.08	17
Idaho	1,297	39	1.27	7
Illinois	8,381	7	0.88	37
Indiana	4,457	19	0.94	33
Iowa	2,850	25	1.15	11
Kansas	2,246	31	1.01	24
Kentucky	2,571	28	0.87	40
Louisiana	3,075	24	0.98	28
Maine	847	43	0.87	39
Maryland	5,578	15	1.32	5
Massachusetts	5,279	16	0.97	29
Michigan	7,165	10	1.08	19
Minnesota	4,851	18	1.08	16
Mississippi	1,511	35	0.84	42
Missouri	3,389	23	0.77	45

[5] Location Quotient is defined as the ratio of HVACR postings per employed worker in each state to HVACR postings per employed worker nationally. A location quotient higher than 1 indicates that demand for HVACR workers in the state is more concentrated than nationally; a location quotient below 1 indicates that demand is less concentrated in the state.

Appendix 2: HVACR State Posting Data (continued)

State	HVACR Postings	HVACR Postings Rank	HVACR Location Quotient[6]	HVACR Location Quotient Rank
Montana	794	46	1.09	14
Nebraska	1,589	35	1.03	21
Nevada	2,137	32	1.11	12
New Hampshire	841	45	0.81	44
New Jersey	5,956	14	0.94	34
New Mexico	1,409	38	1.08	18
New York	9,968	4	0.69	49
North Carolina	7,282	8	1.11	13
North Dakota	1,300	39	1.85	3
Ohio	8,746	5	1.02	23
Oklahoma	2,583	26	1.00	26
Oregon	2,349	30	0.86	41
Pennsylvania	7,010	11	0.75	46
Rhode Island	714	47	0.94	32
South Carolina	3,695	22	1.22	8
South Dakota	881	43	1.31	6
Tennessee	3,964	21	0.88	38
Texas	18,692	2	1.03	22
Utah	1,503	37	0.73	47
Vermont	353	51	0.71	48
Virginia	7,213	9	1.19	10
Washington	5,109	17	1.09	15
West Virginia	623	49	0.53	50
Wisconsin	4,343	20	0.96	30
Wyoming	561	50	1.21	9

[6] Location Quotient is defined as the ratio of HVACR postings per employed worker in each state to HVACR postings per employed worker nationally. A location quotient higher than 1 indicates that demand for HVACR workers in the state is more concentrated than nationally; a location quotient below 1 indicates that demand is less concentrated in the state.

Appendix 3: State Posting Duration Data

The following tables show the average posting duration for HVACR jobs by state and each state's relative rank. Longer durations suggest a larger skills gap in HVACR roles.

State	Posting Duration	Posting Duration Rank
Alabama	40 Days	6
Alaska	21 Days	50
Arizona	37 Days	14
Arkansas	26 Days	46
California	37 Days	15
Colorado	24 Days	48
Connecticut	33 Days	29
Delaware	34 Days	25
Florida	31 Days	35
Georgia	33 Days	28
Hawaii	38 Days	13
Idaho	47 Days	1
Illinois	34 Days	27
Indiana	39 Days	8
Iowa	35 Days	21
Kansas	42 Days	5
Kentucky	33 Days	30
Louisiana	28 Days	42
Maine	25 Days	47
Maryland	38 Days	11
Massachusetts	34 Days	26
Michigan	38 Days	10
Minnesota	27 Days	45
Mississippi	31 Days	33

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Appendix 3: State Posting Duration Data (continued)

State	Posting Duration	Posting Duration Rank
Missouri	31 Days	34
Montana	24 Days	49
Nebraska	28 Days	41
Nevada	29 Days	39
New Hampshire	31 Days	36
New Jersey	32 Days	31
New Mexico	35 Days	22
New York	36 Days	18
North Carolina	35 Days	20
North Dakota	30 Days	37
Ohio	28 Days	40
Oklahoma	39 Days	9
Oregon	34 Days	24
Pennsylvania	38 Days	12
Rhode Island	28 Days	43
South Carolina	42 Days	4
South Dakota	32 Days	32
Tennessee	36 Days	16
Texas	36 Days	17
Utah	27 Days	44
Vermont	39 Days	7
Virginia	35 Days	23
Washington	43 Days	2
West Virginia	43 Days	3
Wisconsin	29 Days	38
Wyoming	36 Days	19

Appendix 4: State Licensure Requirements

In its analysis of skills gap by state, Burning Glass identified the following four general types of state license requirements:

- **Unregulated** – HVAC workers do not require a state license.
- **Technician Only** – anyone wishing to perform HVAC work requires a state license.
- **Contractor Only** – companies that employ HVAC technicians require a state license.
- **Both** – HVAC technicians and HVAC contractors both require a state license.

HVACR licenses also differ in the degree to which out-of-state experience can substitute for in-state license requirements. Burning Glass identified the following five categories of reciprocal agreements:

- **Unregulated** – no statewide license required for HVAC work.
- **No Reciprocal Agreements** – out-of-state experience, education, and testing from another state cannot fill any of the requirements for the in-state HVAC license.
- **Specific List of States** – the in-state licensing board will consider out-of-state experience, education, and testing only from states with which it has an explicit reciprocal agreement.
- **Open to All States** – the in-state HVAC licensing board may allow any out-of-state experience, education, and testing to substitute for its own HVAC license requirements.
- **Preferred List but Open to All States** – explicit reciprocal agreements with other states, but qualifications from any other state are considered.

The following tables list the licensure requirements and reciprocity agreement policies in each state.

Appendix 4: State Licensure Requirements

State	Technician License Required?	Contractor License Required?	Reciprocal Agreement – Limited States	Reciprocal Agreement – All States
Alabama	No	Yes	No	No
Alaska	Yes	Yes	No	Yes
Arizona	No	Yes	Yes	No
Arkansas	No	Yes	No	Yes
California	No	Yes	Yes	No
Colorado	No	No	N/A	N/A
Connecticut	Yes	Yes	No	No
Delaware	Yes	No	Yes	Yes
Florida	No	Yes	Yes	No
Georgia	No	Yes	Yes	Yes
Hawaii	No	Yes	No	Yes
Idaho	Yes	Yes	No	No
Illinois	No	No	N/A	N/A
Indiana	No	No	N/A	N/A
Iowa	Yes	No	No	No
Kansas	No	No	N/A	N/A
Kentucky	Yes	Yes	Yes	No
Louisiana	No	Yes	Yes	No
Maine	No	No	N/A	N/A
Maryland	Yes	No	No	Yes
Massachusetts	Yes	Yes	No	No
Michigan	No	Yes	No	Yes
Minnesota	No	No	N/A	N/A
Mississippi	No	Yes	Yes	No
Missouri	No	No	N/A	N/A

Appendix 4: State Licensure Data (continued)

State	Technician License Required?	Contractor License Required?	Reciprocal Agreement – Limited States	Reciprocal Agreement – All States
Montana	No	No	N/A	N/A
Nebraska	No	Yes	No	No
Nevada	No	Yes	Yes	No
New Hampshire	No	No	N/A	N/A
New Jersey	Yes	No	No	Yes
New Mexico	Yes	Yes	No	No
New York	No	No	N/A	N/A
North Carolina	Yes	Yes	No	No
North Dakota	No	No	N/A	N/A
Ohio	No	Yes	No	No
Oklahoma	Yes	Yes	No	No
Oregon	Yes	Yes	No	No
Pennsylvania	No	No	N/A	N/A
Rhode Island	Yes	Yes	No	No
South Carolina	No	Yes	Yes	No
South Dakota	No	No	N/A	N/A
Tennessee	No	Yes	Yes	No
Texas	No	Yes	Yes	No
Utah	Yes	Yes	Yes	No
Vermont	No	No	N/A	N/A
Virginia	Yes	No	Yes	No
Washington	No	Yes	No	No
West Virginia	No	Yes	No	No
Wisconsin	Yes	Yes	No	No
Wyoming	No	No	N/A	N/A

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Burning Glass's tools and data are playing a growing role in informing the global conversation on education and the workforce by providing researchers, policy makers, educators, and employers with detailed real-time awareness into skill gaps and labor market demand. Burning Glass's job seeker applications power several government workforce systems and have been shown to have substantive impact on reemployment outcomes and on labor market literacy.

With headquarters in Boston's historic Faneuil Hall, Burning Glass is proud to serve a client base that spans six continents, including education institutions, government workforce agencies, academic research centers, global recruitment and staffing agencies, major employers, and leading job boards. Visit us at www.burning-glass.com.

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