The Data Center Workforce: Construction Demand, Long-Term Careers and Emerging Resilience Roles

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Skilled labor, not capital, is now the main constraint on data center construction, but the permanent jobs left after opening are far fewer than the construction workforce, so communities need to plan for both.

Executive summary

Data center developers are competing for the same limited pool of electricians, pipefitters, HVAC technicians and commissioning specialists, and the shortage is stretching schedules. Industrial Info Resources estimates developers will spend about $298 billion on projects in 2026 and about $1.4 trillion through 2030.

- **Current demand (construction phase):** electricians lead, followed by pipefitters, HVAC and cooling technicians, controls and commissioning specialists, and site supervisors. Electrical work is about half of all labor on these projects.
- **Long-term demand (operations phase):** permanent jobs are skilled and stable but few. A common benchmark is 20 to 30 staff per 100 megawatts at colocation facilities, so local planners should test any developer projection against it.
- **Emerging demand (safety and resilience):** lithium-ion battery hazards, remote campuses and extreme weather are creating demand for specialized fire protection, emergency response and backup-power roles. Several of these job titles are projections, and the paper marks them as such.
- **Why it matters locally:** construction jobs are temporary, while operations and resilience roles can anchor lasting local employment if training starts early.

The labor constraint

Investment is not the limiting factor; skilled labor is. The shortage is driven by retirements, too few young people entering the trades, and competition from semiconductor plants, grid upgrades and other industrial projects.

- More than one-fifth of the construction workforce is 55 or older, according to Bureau of Labor Statistics data cited by Burns & McDonnell.
- Foreign-born workers are about 35% of the construction-trades workforce, so tighter immigration enforcement adds strain (AGC, via Bloomberg, July 2026).
- Construction wages rose 3.4% between May 2025 and May 2026, against 2.4% overall. Electrician wage growth ran higher: 6.6% for journeyman, 8.2% for apprentice and 9.9% for commercial electricians (Indeed).
- Data center work is seen as more continuous than shutdown-driven industrial work, which makes it attractive to skilled tradespeople.
- Big technology companies are funding training. Google committed $50 million for skilled-trades training, and Meta launched a $115 million workforce academy with guaranteed data center construction jobs.

The estimates below conflict, so treat them as ranges and confirm against primary sources before quoting.

Measure	Estimate	Source and caution
Construction worker shortage, late 2025	About 439,000	ITIF summary of WSJ reporting
Net new construction workers needed, 2026	About 349,000 (ABC); an earlier 499,000 projection is reported as superseded	Secondary sources disagree; check ABC directly
Electrician deficit, peaking in 2027	About 107,000 (IIR); about 130,000 in a contractor blog	IIR is the more authoritative source
Unfilled data center construction and	About 340,000 of roughly 650,000	Industry estimate repeated in secondary

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operations roles, end of 2026	needed	sources; not traced to a primary source
Share of data center technical workforce at or near retirement	About one-third	Uptime Institute, via a secondary summary

Current opportunities: the construction phase

Electricians are the scarcest trade and cannot be substituted with adjacent trades. Roles are listed roughly in order of how often sources name them as short.

Role	Why it is in demand	Typical credentials and notes
Journeyman and commercial electricians	An AI data center is largely a power distribution facility; electrical is 45 to 70% of construction cost (IBEW)	Journeyman license; OSHA 30; NFPA 70E; medium-voltage experience pays more
Pipefitters and mechanical trades	Named second after electricians in a July 2026 Bloomberg survey of builders	Apprenticeship or journeyman status; welding and process piping
HVAC and cooling technicians	Shift to direct liquid cooling; HVAC engineer vacancies reported up 78% from 2022 to 2026	Licensed HVAC or plumbing; EPA refrigerant certification
Controls technicians (I&E and I&C)	Aggressively recruited, often at wages above traditional industrial work (IIR)	Instrumentation and controls training; BMS and EPMS familiarity
Commissioning agents and technicians	A building cannot pass commissioning without controls and mechanical specialists	Commissioning Levels 3 to 5; integrated systems testing
Site supervisors and project managers	Contractors report turning away work for lack of supervisors	Mission-critical project experience; McKinsey projects a 150,000 supervisor gap by 2030
Lineworkers and high-voltage technicians	Power access and substations drive schedules	Utility or IBEW lineworker training
Welders, fiber and low-voltage installers, equipment operators, carpenters, steel workers	Named in workforce lists for site and structural work	Trade-specific certifications
Safety personnel and QA/QC engineers	Required for mission-critical compliance and handover	OSHA 30; NFPA 70E

Data center work typically pays a premium over standard commercial construction: one source reports about 32% above, with an average near $81,800. Treat that average as indicative only.

Skills and credentials on the job site

Job postings reviewed for this paper ask for the same core set, which makes them a practical training checklist.

- **Safety:** OSHA 10 or 30, NFPA 70E electrical safety, and lockout/tagout.
- **Refrigerants:** EPA Universal certification for cooling work.
- **Power systems:** UPS, switchgear, automatic transfer switches and generators, with redundancy concepts such as N+1 and 2N.
- **Cooling systems:** chillers, CRAH units, coolant distribution units, direct-to-chip and rear-door heat exchangers, and technical water treatment.
- **Controls and monitoring:** BMS and EPMS platforms, alarm response and DCIM integration.
- **Commissioning:** functional testing, Levels 3 to 5, integrated systems testing and handover documentation.
- **Documentation:** CMMS records, methods of procedure and standard operating procedures.

Power density is also changing the skill mix. One source notes AI training clusters need five to ten times the power density of traditional workloads, which calls for high-density power distribution, liquid cooling and

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structural reinforcement expertise that many experienced engineers have not yet worked with.

Modular construction is one response to the shortage: large sections are built offsite and installed on site, which shifts some work to factories.

Future opportunities: long-term operations careers

Once a facility opens, construction jobs end and a much smaller operations team takes over. Permanent headcount varies widely by facility type, so these figures are best used as a reality check on developer projections.

Example	Construction jobs	Permanent jobs	Note
Colocation benchmark	n/a	20 to 30 per 100 MW	Governing, citing Brookings-studied facilities
US Chamber model, average facility	About 1,688 local workers	157 ongoing local jobs	Includes supply-chain jobs, not only on-site staff
Georgia, statewide 2025	28,350	5,471	State audit, via Capitol Beat
Abilene, Texas, 1 GW	6,400	100 to 1,000 (range of estimates)	Range too wide to plan around
Wisconsin, 1 GW	4,000	1,000 long-term	Reported projection
Georgia, 3.2 GW project	Multi-year phased build	400	Reported projection

Sustainable roles, which also tend to require no four-year degree:

1. **Critical environments operators and data center technicians.** 24/7 operations and maintenance roles. At least one operator advertises entry levels with no prior data center experience and a defined progression to lead operator.
2. **Critical facilities engineers.** One posting shows a path from Technician II to Senior Technician, Facilities Engineer and Site Lead.
3. **Electrical and mechanical maintenance technicians.** They service UPS, switchgear, generators, chillers and CRAH units, and monitor BMS and EPMS systems.
4. **Liquid cooling operations technicians and managers.** A newer discipline with a thin talent pool.
5. **Data center operations and critical facilities managers.** One source puts large colocation critical facilities managers at $140,000 to $180,000.
6. **Controls, fire and life-safety, and security specialists.**
7. **Local service contractors.** Generator, fuel, HVAC service and facilities vendors supply ongoing local work.
8. **Apprenticeship pipelines.** These feed every role above. Skills also transfer to hospitals, power plants, military bases and renewable energy.

Retention supports long-term demand. Uptime Institute’s 2025 survey of 864 professionals found nearly two-thirds of operators struggle to retain staff, find qualified candidates, or both.

Emerging roles: fire protection, emergency response and resilience

Data centers are creating public-safety needs that many rural and volunteer fire departments are not equipped to meet, and that gap is where new jobs are likely to appear.

What the evidence shows

- Traditional data center fire suppression does not address thermal runaway spreading inside a lithium-ion battery pack, and battery incidents are expected to become more frequent until the hazards are engineered out.
- Firefighters involved in developing a Northern Virginia response manual say a data center fire needs a very

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different approach from a typical structure fire.

- Training is starting to appear. Bucks County Community College in Pennsylvania announced a course on fire and emergency response for data centers and lithium battery incidents.
- Capacity gaps are being raised publicly. A 20-member volunteer department in Abbott, Texas said it would need over $1 million in equipment, and Dubuque County, Iowa supervisors questioned relying on volunteer response for a hyperscale site.
- A paid model already exists. Rural Metro Fire markets fire, EMS, inspection and plan-review services for data centers and battery storage sites in unincorporated Arizona corridors.
- Extreme weather is a design driver. Some operators have switched to on-site generation during a major winter storm to free grid power for homes and emergency services, although that report is secondary and its capacity figure is unverified.

Likely new or growing positions (projection, not yet widely advertised)

Position	What it would do
Campus fire brigade member or contracted fire protection staff	Respond to electrical and lithium-ion battery fires at remote sites
Fire inspector and plan reviewer, data center and battery storage	Review designs and inspect high-density electrical and cooling systems
Hazmat and technical rescue specialist	Handle battery thermal runaway and contaminated runoff
Developer-funded fire and EMS crew for remote campuses	Cover areas without a tax-funded fire district
Emergency management and business continuity coordinator	Plan site and county response to outages and disasters
Weather and wildfire preparedness coordinator	Prepare remote campuses for flood, storm and wildfire
Microgrid, backup generation and battery storage technician	Run a site in island mode during regional outages
First-responder trainer and curriculum developer	Build courses at community colleges and fire academies
Drone and remote-monitoring operator	Support site security and incident response

Implications for communities

The recommendations in this section are the author’s analysis, not findings from the cited sources.

1. **Train for the build and the operation together.** Construction work ends, so apprenticeships in electrical, mechanical and controls trades should lead toward the permanent operations roles.
2. **Test developer job claims.** Compare any projection with the benchmark of 20 to 30 permanent staff per 100 MW at colocation facilities, and ask what share of jobs are on site versus supply-chain.
3. **Plan emergency response before the project opens.** Counties with volunteer departments should ask whether the developer will fund equipment, training, inspection or a paid response model.
4. **Build a skills bridge.** Electricians, HVAC technicians and facilities staff from manufacturing, utilities and commercial real estate can move into operations with targeted upskilling.
5. **Use veterans and transitioning service members.** At least one employer already runs a SkillBridge commissioning technician program.
6. **Think regionally.** Several data center jobs competing in the same labor market can create steadier local demand than a single facility.

Limitations and data notes

- Figures come from web search results dated through October 2026. Individual pages were not independently opened, so verify numbers against primary sources (BLS, ABC, IIR, Uptime Institute, state audits) before publishing.
- Several sources are staffing firms and vendors with a commercial interest in showing a shortage.

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- Pay figures come from job postings and blogs. The $240,000 to $300,000 range reported for medium-voltage and liquid-cooling electricians is an outlier from a single source and is not relied on here.
- Permanent job counts differ by facility type. Single-tenant hyperscale sites often employ fewer people than colocation sites.
- Emerging fire and resilience job titles are projections based on documented needs, not verified postings, except where a model such as Rural Metro Fire is named.
- A March 2026 federal bill proposed pausing new large-scale AI data center construction. Its status was not verified and should be checked, since it would affect construction timelines.
- Job-title lists describe demand patterns and should not be read as guarantees of employment.

Appendix: website job directory structure

Under the main Jobs category, use two top-level subcategories, **Current Opportunities** and **Future Opportunities**, each with the groupings below.

Subcategory	Group	Positions to list
Current Opportunities (construction phase)	Electrical	Journeyman electrician, commercial electrician, apprentice electrician, high-voltage technician, lineworker
Current Opportunities (construction phase)	Mechanical and Piping	Pipefitter, welder, mechanical installer
Current Opportunities (construction phase)	HVAC and Cooling	HVAC technician, liquid cooling installer, technical water treatment specialist
Current Opportunities (construction phase)	Controls and Commissioning	I&E technician, I&C technician, commissioning technician, commissioning agent
Current Opportunities (construction phase)	Site Leadership and Safety	Site supervisor, project manager, QA/QC engineer, safety professional
Current Opportunities (construction phase)	General Trades and Equipment	Carpenter, steel worker, fiber and low-voltage installer, equipment operator, laborer
Future Opportunities (operations phase)	Operations and Maintenance	Critical environments operator, data center technician, electrical and mechanical maintenance technician
Future Opportunities (operations phase)	Facilities Engineering and Management	Critical facilities engineer, operations manager, site lead, liquid cooling operations technician and manager
Future Opportunities (operations phase)	Controls, Fire and Life Safety, Security	BMS and controls specialist, fire and life-safety technician, security specialist
Future Opportunities (operations phase)	Local Services and Supply	Generator, fuel, HVAC service and facilities contractors
Future Opportunities (emerging)	Fire and Emergency Response	Campus fire brigade member, fire inspector, hazmat and technical rescue specialist, remote-campus fire and EMS crew
Future Opportunities (emerging)	Resilience and Power	Emergency management coordinator, weather and wildfire preparedness coordinator, microgrid and battery storage technician
Future Opportunities (emerging)	Training and Education	First-responder trainer, curriculum developer, apprenticeship coordinator

Each listing should show the credentials it requires, such as OSHA 30 or NFPA 70E, and mark whether it is a

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verified posting or a projected role.

Sources

Located through web search in October 2026; pages were not individually opened.

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