

Engineering Workforce Planning Guide

Plan engineering headcount against phase gates, not calendar years

Capital programs plan long-lead equipment carefully and plan engineering labour casually. In practice engineering availability constrains a schedule as hard as a switchgear delivery date, and it is less visible because nobody issues a purchase order for it.

This guide sets out a planning method: map discipline demand to phase gates, work backwards through real lead times, then test the plan against the constraints that actually govern availability.

Phase-gate demand model

Engineering demand is not linear across a project. It arrives in discipline-shaped waves tied to gates.

- Feasibility and design: design leads, electrical and mechanical engineers, project controls
- Procurement and long-lead: package engineers, quality and expediting, scheduler capacity increases
- Construction: field engineers, superintendents, quality inspectors, safety coverage
- Pre-functional and functional testing: commissioning engineers, controls engineers, instrumentation technicians
- Integrated testing and handover: commissioning managers, documentation and turnover coordinators
- Operations transition: maintenance, reliability and SCADA support

Lead-time ladder

Work backwards from the date the engineer must be productive, not the date you would like to interview.

- Requisition approval and intake: 3 to 5 working days

- Sourcing to first qualified shortlist: 5 to 15 working days depending on discipline scarcity
- Interview and decision: 5 to 15 working days, driven almost entirely by client calendar
- Offer to acceptance: 2 to 5 working days permanent, 1 to 3 days contract
- Notice period: 0 to 20 working days contract, 20 to 60 permanent
- Screening, induction and badging: 3 to 20 working days, often the forgotten block
- Ramp to productive: 5 to 15 working days depending on documentation quality

Constraint map

Every constraint narrows the pool. Write them down and quantify the narrowing before committing to a date.

- Location and commute reality, including whether the site is served by an airport
- Rotation pattern and time away from home
- Licensure and jurisdiction: PE registration, local electrical licensing
- Certifications and clearances with fixed renewal or issue lead times
- Client-specific requirements: prior sector experience, platform experience, security clearance
- Language and documentation requirements on multinational programs

Blended team design

Most infrastructure programs are best served by a deliberate mix rather than a single model.

- Permanent core for institutional knowledge, standards ownership and operations continuity
- Contract capacity for phase-specific peaks with defined ramp-down dates
- Project-based teams where an entire scope can be delegated with its own supervision
- Payrolled capacity for engineers you have already identified but cannot employ directly
- Conversion decision points scheduled in advance rather than negotiated under pressure

Ramp-down and knowledge capture

Demobilisation is a planning activity. Treated as an administrative one, it costs the program its documentation.

- Ramp-down dates published to the team at mobilisation, not near the end
- Turnover documentation standards defined at the start of the engagement
- Conversion offers made before contractors begin their next search, typically 8 to 12 weeks out
- Retention of a small commissioning and documentation tail past substantial completion
- Debrief capturing what the schedule actually required versus what was planned

Planning review agenda

Run this as a standing item in the schedule review, next to long-lead equipment.

- Which gates move in the next 90 days, and which disciplines that changes
- Open requisitions against the lead-time ladder: which start dates are already impossible
- Constraint changes: site location, rotation, client requirements
- Attrition and rotation risk in the current team
- Conversion decisions due in the next quarter
- Actions with named owners and dates

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