

Lab Redesign Manager Checklist

Reconfigure · Renovate · Relocate — a decision worksheet for lab managers

Walk this checklist with your architect, GC, or facilities lead before you commit to a capital request. First Party Resources cited on the last page. (NIH, WBDG, Labs21/EPA, SEFA).

1 · The five signals your lab is telling you it needs redesign

- ☐ Bench utilization exceeds 85% at peak — techs are queuing for space, not just equipment.
- ☐ Aisle clearance is below the 5'-0" NIH DRM minimum in one or more zones.¹
- ☐ Workflow paths cross more than three times between accession, staging, and analyzer banks.
- ☐ Storage capacity is under 60% of current sample volume — reagents are stacked on the floor or in the corridor.
- ☐ The safety committee has flagged the same complaint (eyewash access, negative-pressure boundary, chemical storage) in two consecutive audits.

2 · The four common drivers (identify which one applies)

- ☐ Sample volume is up 25% or more year-over-year, and the trend is holding.
- ☐ Headcount grew and there is nowhere to add a workstation without eating an aisle.
- ☐ The compliance regime changed — a new NFPA, CAP, CLIA, or OSHA rule now applies to the space.
- ☐ The building itself is aging — HVAC, plumbing, or electrical service can no longer support the load.

3 · The three-tier decision matrix

Match your situation to the tier below. If two tiers seem to apply, the higher tier usually wins — because the smaller intervention will fail to address the underlying constraint.

Tier	When it fits	Typical scope	Downtime	Budget tier
Tier 1 Reconfigure	Bench utilization high, but casework runs and HVAC are sound. Workflow can be rebalanced by moving lab tables and equipment.	Lab table repositioning, mobile cart adds, minor casework tweaks. No permit typically required.	Often days to a long weekend.	Lowest — often absorbed in operating budget.
Tier 2 Renovate	Casework runs, plumbing, or ventilation can no longer support the workload. HVAC and electrical remain adequate at the building level.	Casework replacement, fume hood addition or upgrade, plumbing rework, new bench materials. Permit typically required. ²	Typically weeks to a few months; plan phased shutdowns.	Mid — capital request; often the cheapest per useful year.
Tier 3 Relocate	Building envelope, HVAC capacity, or floor loading cannot support current or projected use. Reconfigure/renovate would be a permanent workaround.	Program a new space; move the lab to a purpose-built shell. Consider WBDG zero-carbon envelope guidance for new construction. ³	Generally many months; parallel-build can avoid a hard shutdown.	Highest — but lowest total cost when the alternative is repeated failed renovations.

Note: every lab project is different. The downtime and budget ranges above are meant as a rough starting frame for the conversation, not a benchmark. Actual timelines depend on scope, permit path, phasing, and equipment lead times.

4 · Building the business case leadership will approve

Three numbers move budget conversations. Fill each in — even a rough figure — before you walk into the capital request meeting.

The workaround tax (annual)

- ☐ Estimate hours per week lost to queueing, walking around blocked aisles, or manual sample transfer.
- ☐ Multiply by fully-loaded tech hourly rate × 50 weeks. Write the number here: _____
- ☐ Add any recurring third-party rework or resend costs tied to the space constraint.

The compliance-risk number

- ☐ Identify any audit finding tied to the space (eyewash reach, negative-pressure boundary, chemical storage).
- ☐ Estimate cost of the fine, remediation, or accreditation delay if the finding recurs. Write it here: _____
- ☐ Note the source of the requirement (NFPA, CAP, CLIA, OSHA, state) so leadership sees it is not vendor-driven.

The energy anchor number

Lab facilities generally run 3–10× the energy intensity of office space. A right-sized renovation or purpose-built envelope can cut EUI meaningfully, per Labs21/EPA benchmarking.⁴

- ☐ Pull the last 12 months of energy bills for the lab space (electric + gas + steam if applicable).
- ☐ Estimate the fume-hood face-velocity setpoint and total operating hours per week.
- ☐ Ask your mechanical engineer for a projected EUI post-renovation and post-relocation.
- ☐ Write the annual utility spend today: _____
- ☐ Write the projected annual spend after renovation: _____
- ☐ Write the projected annual spend in a new zero-carbon envelope: _____

5 • Common mistakes to catch before you submit

- ☐ Framing the project as "we feel crowded" instead of showing bench utilization and aisle-clearance data.
- ☐ Under-scoping ductwork — a new hood almost always drives a supply/exhaust rebalance that a reconfigure cannot absorb.
- ☐ Skipping a feasibility study on Tier 2/3 projects because "we know what we need" — the study is what leadership funds against.
- ☐ Specifying phenolic or epoxy sinks as integral to the top. Epoxy sinks are separate molded units (drop-in or undermount); phenolic sinks do not exist in standard lab casework catalogs.
- ☐ Treating relocation as a last resort when a Tier 2 renovation may only buy a short window of relief before the same constraint returns.
- ☐ Forgetting the safety committee. Loop them in on the first meeting, not the third.

6 · Meeting-ready capital request outline

- ☐ One-paragraph narrative: what changed in the lab (volume, headcount, compliance, building).
- ☐ Which tier (1 / 2 / 3) and why the tier below will not solve it.
- ☐ The three numbers: workaround tax, compliance risk, energy anchor.
- ☐ Phasing plan and required downtime — align to the annual capital calendar.
- ☐ Alternatives considered and rejected (with the reason).
- ☐ One-page floor plan sketch or existing plan with proposed changes redlined.

Sources

1. NIH Office of Research Facilities — Design Requirements Manual (DRM), Chapter on aisle clearances and lab planning.
<https://orf.od.nih.gov/TechnicalResources/Documents/DRM/DRM2.108022024.pdf>
2. WBDG — Private Sector Laboratory (design references for renovation scope and permitting).
<https://www.wbdg.org/building-types/research-facilities/private-sector-laboratory>
3. WBDG — Renovating Research Laboratories to Zero Carbon by 2030.
<https://www.wbdg.org/resources/renovating-research-laboratories-zero-carbon-2030>
4. Labs21 / EPA — Laboratory Energy Benchmarking (LBNL-3391E).
<https://eta-publications.lbl.gov/sites/default/files/lbnl-3391e.pdf>