THE FUND OUR SCHOOLS CHALLENGE
by Funkatronic Rex in collaboration with Lateral Solutions Architects

AI is coming to public schools. Who will it work for—kids and teachers, or vendors and surveillance?

The offer (simple): Create a **$150B permanent public School & Library Fund** that pays out **~$6B/year**—every year—so upgrades do not die when a grant ends.

What the fund buys (3 promises)

1) Teacher-first AI (less workload, not more).
A small set of vetted AI "co-pilots," reliable devices, and **paid time** to learn. Plus **AI & Workload Stewards** whose job is to delete pointless paperwork and fix broken systems.

2) Real student access (no more "some kids have iPads").
Each year, at least one **Connected Student Cohort** gets: a working device, home internet help if needed, and straight talk on how AI works—when to use it, when to say no. Cohorts **stack** until everyone's covered.

3) Solar schools + community hubs (save money, safer buildings).
Put solar and efficiency on school and library roofs—lower bills, cooler/cleaner classrooms in heat and smoke, and local work. Libraries and community groups become trusted "digital help desks" for families.

What this creates

At scale: **~60,000–100,000 full-time job-years every year** (educators/support staff, stewards, library staff, electricians, roofers, HVAC, energy auditors).

The non-negotiables

- **Public governance—not a tech company.** Teachers, unions, students, families, librarians, community + climate/tech experts have seats.
- **No surveillance.** No secret scoring, spying, or punishment-by-algorithm—for teachers or students. Tools can be challenged and shut down.

The challenge (say this out loud)

If you don't like this plan, show your plan—and show how it does *more* for students, teachers, jobs, and the climate.

Bring one question to your next meeting:
"Will our AI plan fund teacher time, protect kids from surveillance, create local jobs, and cut energy bills—permanently?"

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Abstract

This thesis presents the **Fund Our Schools Blueprint**: a worked system design for national AI and digital infrastructure in U.S. public K–12 education and libraries. The Blueprint starts from four non-negotiable commitments: **teacher time and dignity**, **equity and public purpose**, **climate responsibility and intergenerational justice**, and **democratic governance and worker power**. Instead of asking whether AI is "good" or "bad" in the abstract, it asks a more concrete question: if AI and digital systems are coming to public education anyway, what would it take to build them so they protect teacher time, expand opportunity for young people, create good jobs, and run net-negative on carbon within a clear program boundary?

Methodologically, the thesis uses a **design-based systems blueprint** approach. It synthesizes research on teacher work and attrition, devices and digital divides, AI and productivity, AI in education and AI literacy, education finance and permanent funds, climate and solar schools, and governance, ethics, equity, and labor. This literature is treated as a **constraint surface**, ruling out designs that rely on free increases in teacher labor, deepen inequities, ignore climate impacts, or concentrate platform power without accountability. Within those constraints, the thesis specifies a four-layer architecture: (1) a **Teacher Time Layer**; (2) a **Connected Student Cohort & AI Literacy Layer**; (3) a **Solar Schools & Climate Spine**; and (4) a **Libraries & Community Layer**.

The architecture is financed by a proposed **$150 billion Fund Our Schools Permanent Fund** using a **4% payout rule**, yielding an expected ≈**$6 billion per year** in spending power. Under conservative planning assumptions, the Blueprint's Lean, Core, and Extended scenarios require ≈**$3.0–3.1B**, **$4.0–4.1B**, and **$5.15–5.2B** per year respectively, all within the projected payout. At this scale, the program is modeled to support on the order of **60,000–100,000 job-years annually**, concentrated in education, libraries, community organizations, and clean energy and efficiency work around schools. Climate modeling, using conservative estimates of device and AI energy use and school- and library-based mitigation, targets program-level coverage ratios **$E_{mit} / E_{prog} > 1.0$** in all scenarios and ≈**1.5–1.6** in Extended scenarios, making the program net-negative within its defined boundary.

Finally, the thesis specifies **governance, labor, data, and AI, KPI, failure condition, challenge, and risk** tools to make these commitments monitorable and contestable over time. It does not claim that the Fund Our Schools Blueprint is the only possible design, or that it will be implemented as written. It claims that there exists at least one **internally coherent, fiscally and climatically plausible, teacher-first, equity-centered, job-creating** architecture for national AI and digital infrastructure in public education, and that future debates about "AI in schools" should be held to at least this standard of clarity, constraint, and accountability.

Executive Summary

The Challenge

AI and digital tools are already walking into public schools—mostly through vendor platforms, grant cycles, and one-off pilots. Nobody is really in charge of the overall architecture. At the same time:

- Teachers are burning out and leaving.
- Young people still face basic gaps in devices, connectivity, and safe guidance on AI.
- School buildings and libraries sit on some of the best public rooftops in America while we argue about climate.

If we keep drifting, AI will be something *done to* teachers and students, not something designed *with* them. Workloads will creep up, surveillance will creep in, and vendor roadmaps will quietly decide what "AI in school" means.

This Blueprint asks a simple question:

If we are going to wire AI and digital systems into public K–12 anyway, why not do it in a way that protects teacher time, expands opportunity for young people, creates good jobs, and runs net-negative on carbon within its own program boundary?

Instead of treating teacher time, equity, climate, and jobs as "nice-to-have" side effects, the Fund Our Schools Blueprint treats them as hard constraints—on the same level as the budget and safety rules.

The Blueprint in one page

The Fund Our Schools Blueprint is a worked system design for national AI and digital infrastructure in public K–12 schools and libraries. It has two main pieces:

1. **A Fund Our Schools Permanent Fund –** a mission-locked public fund with a target corpus of **$150B** and a conservative **4% payout rule**, generating an expected ≈**$6B per year** in stable funding.
2. **A four-layer architecture** that spends that funding the same way every year, across the whole country, with teacher time, youth opportunity, climate responsibility, and job creation baked in:

- **Teacher Time Layer**
    - Devices and a small, curated set of AI co-pilots for teachers, funded as infrastructure, not as a side benefit.
    - Paid learning time and protected space for teachers to test and shape new workflows.

    - **AI & Workload Stewards**—dedicated roles that map time use, co-design changes, and guard against coercion and surveillance.
    - Non-coercion and anti-surveillance protections in policy and contracts.
    - A simple rule: if you add a new tool, you must remove or shrink some low-value work.
- **Connected Student Cohort & AI Literacy Layer**
    - At least **one national Connected Student Cohort per year** (for example, one grade band).
    - Devices and connectivity support for every student in that cohort.
    - A sequenced AI literacy experience for students, teachers, and families so people know what they are doing with these tools.
    - Equity-sensitive KPIs to track who is getting meaningful access and who is being left out.
- **Solar Schools & Climate Spine**
    - Solar and efficiency projects at schools and libraries.
    - Local climate projects tied to these sites, so climate work is visible where students and families live.
    - Program-level climate accounting that treats emissions from devices, connectivity, and AI workloads as a responsibility, not an externality.
    - A cautious removals margin to make sure the program remains net-negative within its boundary.
- **Libraries & Community Layer**
    - Libraries and community organizations as shared access points and AI literacy hubs, not afterthoughts.
    - Infrastructure and staff time for public classes, family nights, and community governance roles.
    - Library and community seats in the same governance structures that oversee AI, data, and climate decisions.

All four layers run together in three **scenarios**—Lean, Core, and Extended. What changes is intensity and coverage, not the underlying values or architecture.

Economics: one headline number

Under conservative planning assumptions (**≈3.8M teachers, ≈3.8M students per Connected Cohort, ≈100k schools, ≈40k libraries and partners**), a $150B Fund Our Schools Permanent Fund with a 4% payout rule is modeled to provide an expected ≈$6B in annual spending power.

Within that envelope, the four-layer architecture is costed at three levels:

- **Lean:** ≈**$3.0–3.1B** per year
- **Core:** ≈**$4.0–4.1B** per year

- **Extended: ≈$5.15–5.2B** per year

Every scenario sits **under** the expected ≈$6B payout:

- Lean leaves exceptionally large headroom—roughly half the payout—for shocks, research, or targeted expansion.
- Core balances strong implementation with a comfortable buffer.
- Extended pushes toward the upper bound—still with cushion, but tighter, and treated as a ceiling rather than the starting line.

The modeling is intentionally conservative:

- Planning counts are rounded and transparent instead of chasing false precision.
- Unit costs (devices, co-pilots, paid time, stewards, solar, efficiency, library programs, governance, evaluation) are chosen toward the higher end of plausible ranges.
- Here "conservative" means cautious planning assumptions—high side on costs and emissions, low side on returns and savings—not an ideological label.
- Governance, evaluation, and risk management are **fully costed**, not hand-waved as "somebody else's problem."

This is not fantasy money. It is a conventional, endowment-style structure applied to schools and libraries; with numbers you can audit.

Climate: one headline ratio

The Blueprint treats climate as a design constraint. Using conservative assumptions about:

- Device production and operation,
- Connectivity and AI workloads,
- Solar performance and efficiency gains, and
- Local climate projects and a small removals margin,

The program aims for coverage ratios:

- **E_{mit} / E_{prog} > 1.0 in all scenarios** (net-negative within the program boundary), and
- **≈1.5–1.6 in Extended**, providing substantial over-coverage.

These are planning ratios, not promises that every solar panel will perform perfectly. The point is to show that if you insist on counting the emissions and build the climate spine into the same architecture that funds devices and AI, a **net-negative design is possible** under realistic conditions.

If someone wants to argue we should ignore that option and keep running AI on uncounted emissions, the burden is on them.

Jobs and economic impact: one quiet powerhouse

The Blueprint is also a jobs plan, especially for the kinds of steady, community-anchored work that people want.

Within the same ≈$6B annual envelope, the architecture:

- Funds **AI & Workload Steward roles** at scale. Even with conservative ratios (for example, one steward per a few hundred teachers), this is thousands of skilled, often union-aligned jobs focused on protecting teacher time and shaping AI use, not enforcing quotas.
- Drives a **long pipeline of climate and facilities work**—design, installation, and maintenance of solar and efficiency projects across ≈100,000 schools and ≈40,000 libraries and partners. That is decades-long work for electricians, roofers, HVAC specialists, energy auditors, and local contractors.
- Expands **library and community staff time** for AI literacy, youth programming, and governance roles. These are front-line jobs that keep public spaces open, safe, and useful.
- Invests in **teacher paid learning time**, which is payroll by another name—hours teachers are paid to upskill, collaborate, and co-design, instead of doing unpaid "homework" on nights and weekends.

In other words: the Blueprint does not just buy devices. It buys good work—with clear public value. For policymakers, this means:

- Every dollar is doing double and triple duty: stabilizing schools, upgrading climate infrastructure, and **supporting employment**.
- The fund structure smooths boom-and-bust cycles: instead of "one-time grants" for vendor pilots, you get predictable, multi-decade job and project pipelines.

If a politician wants a "safe win" that is pro-youth, pro-teacher, pro-climate, and pro-jobs, this is exactly that kind of move.

Governance, labor, and risk: built in, not bolted on

The Blueprint assumes that design alone is not enough. It therefore specifies:

- A **Fund Board** with fifty-one seats, including teachers and unions, students and families, libraries and community organizations, climate and AI experts, and education authorities, all under a clear mission lock.
- A **National Fund Our Schools Council**, regional councils, and local Fund Our Schools Committees that share decision-making over AI tools, climate projects, and program design.

- **Data and AI governance** tools: Data Purpose Schedules, contracts with strict purpose limitation and audit rights, minimal and aggregated data flows, and integrated audits and incident response.
- **Labor protections and teacher power**: non-coercion and anti-surveillance clauses, limits on AI-generated data in evaluation and discipline, AI & Workload Stewards independent of line management, and model contract language for bargaining over AI and digital tools.
- **KPIs, failure conditions, challenge mechanisms, and risk registers**, so that teacher time, equity, climate coverage, governance participation, and incidents are monitored—and pre-defined failure patterns automatically trigger reviews and responses.

These pieces are not decorative. They are there so teacher time, equity, climate, and jobs cannot quietly be traded away after the press conference.

What this Blueprint claims—and what it does not

The central claim is modest but sharp:

There exists at least one internally coherent, fiscally, and climatically plausible way to organize national AI and digital infrastructure for public K–12 education and libraries around teacher time, equity, climate responsibility, and job creation: the four-layer, permanent-fund-backed Fund Our Schools Blueprint.

The Blueprint does **not** claim that:

- This exact design will or should be implemented as written,
- Permanent funds are always the best funding mechanism, or that $150B and 4% are the only right numbers,
- Specific effects on learning or wellbeing are already known, or
- Politics and institutional pushbacks will magically disappear.

Instead, it is offered as:

- A **worked example** of teacher-first, youth-centered, climate-responsible, job-creating AI, and digital infrastructure.
- A **foil** and challenge for other architectures and funding models ("If not this, show your math.").
- A **toolkit** of components—governance, labor clauses, climate spine, AI literacy, KPIs, and challenge mechanisms—that can be used in partial or smaller-scale implementations.
- A **research artifact** that generates concrete, testable questions about system-level design.

If someone wants to say "no" to this Blueprint, they can. But they do not get to hide behind "we don't know what it would look like" or "it's impossible to fund." They must put a distinctive design on the table and explain, in public, why their version serves young people, teachers, communities, climate, and jobs better than this one.

That is the whole point of the Fund Our Schools Blueprint.

Note on AI Use in Developing This Thesis

This thesis was developed with selective use of large language model (LLM)–based tools as **writing and thinking assistants**, not as authors or data sources.

Specifically:

- I used AI tools to **rephrase, reorganize, and tighten** sections I had already drafted, and to generate alternative wordings and headings.
- I used AI tools to help **check consistency** of terminology, numbers (for example, the $150B corpus, 4% payout rule, scenario cost bands, and climate coverage ratios), and cross-referencing across chapters and appendices.
- I occasionally used AI as an "adversarial reader" to surface questions a skeptical policymaker, educator, or examiner might ask about the design.

I did **not** use AI tools to:

- Generate empirical data, fabricate sources, or invent study findings.
- Decide core value commitments, the overall architecture, or the choice of a permanent fund model.
- Replace my own judgment about feasibility, ethics, or politics.

All literature referenced in this thesis is based on sources that can be independently located and checked. Any errors in interpretation, modeling, or judgment are my own.

This use of AI mirrors the stance of the Blueprint itself: AI is treated as a **co-pilot for some parts of the work**, operating inside clear limits and human governance, not as a substitute for authorship, expertise, or responsibility. A more detailed breakdown of how and where AI tools were used, and where they were not, is provided in Appendix G.

Chapter 1 – Introduction: Why a Fund Our Schools Blueprint?

1.1 Background

Public K–12 education in the United States is being asked to carry more weight on top of structures that were never really built for what we are asking them to do now.

Teachers are supposed to hit rising academic standards, personalize learning, attend to mental health and trauma, communicate with families, document everything, and somehow keep showing up with energy and care—often while being underpaid, understaffed, and over-scrutinized. None of this is news inside schools. It just rarely shows up honestly in the way we design systems and budgets.

At the same time, AI and digital tools are pouring into classrooms and offices through whatever door is open: vendor platforms, district pilots, individual teachers experimenting on their own time, students showing up already using tools like ChatGPT. Some of this is genuinely helpful. A lot of it is half-baked, misaligned, or simply not designed with teacher time, equity, or climate in mind. The default pattern is tools arrive first, governance and labor protections jog behind, and climate is not even in the frame.

Infrastructure is part of the story too. Schools and libraries already sit on serious physical and digital assets—buildings, rooftops, networks, devices, and data. Those assets are tied to the climate crisis through energy and materials. They are tied to equity and power through who controls the infrastructure, who has reliable access, and who gets watched most closely. Right now, those links are mostly invisible in the way we make decisions.

Sitting in the middle of all this is a simple tension:

- On one side: everyday reality in schools—overstretched people, patchy tools, and a climate crisis that does not care that we are "busy."
- On the other: a wave of AI, infrastructure, and public investment that is going to reshape schools whether we plan for it or not.

This thesis takes that tension seriously. It does not try to answer whether "AI in schools" is good or bad in the abstract. It asks a different, more concrete question:

If AI and digital systems are going to be part of public education anyway, what would it take to build them, so they protect **teacher time**, **shrink gaps instead of widening them**, and **reduce climate harm instead of quietly adding to it**?

The Fund Our Schools Blueprint is one worked answer to that question. It does not pretend to be the only answer. It tries to show, in detail, that there is at least one way to do this that is coherent, fiscally, and climatically plausible, and defensible in public.

1.2 Problem Statement

This Blueprint starts from three linked problems that are already shaping school life every day.

First, teacher workload and burnout are not temporary glitches.
Teachers routinely work well beyond their contracted hours. A lot of this work is invisible: late-night planning, feedback on student work, messaging families, emotional care for students, navigating broken systems and missing services. These pressures land hardest in high-poverty schools, in high-need subjects, and on educators who share identities and communities with their students. Turnover is patterned, not random. The people we most need to stay are often the ones pushed out.

Second, digital and connectivity divides are stubborn and layered.
Devices and platforms are unevenly distributed, and even where the hardware "exists," reliability and support do not. A student might have a school-issued device but spotty broadband, capped data, or a shared laptop at home. Even when access is there, the nature of use divides students again: some get creative, higher-order work and meaningful feedback; others get drill, digital worksheets, monitoring, and automated flags. These patterns track race, class, disability, language, and geography.

Third, education and climate are already entangled, whether we act on it or not.
Schools and libraries are energy users and potential clean-energy sites. They are places where heat, smoke, floods, and storms show up in real time. They are also where young people learn (or do not learn) how to think about climate and infrastructure. Yet decisions about buildings, devices, energy, AI workloads, and data centers are usually made separately, if they are made consciously at all. AI systems add more compute, more energy demand, and more embodied emissions, but they are normally deployed as if all of that lives "somewhere else."

These three problems—workload, divides, and climate—keep looping back on each other:

1. New tools and platforms arrive, promising efficiency or personalization.
2. Teachers are expected to adopt them on top of existing work.
3. Some students benefit more than others.
4. Emissions and long-term costs are barely tracked.
5. Governance, labor protections, and community voice stay one or two steps behind.

The result is a system that is quietly being reshaped by technology and finance, but **not** around clear, enforceable commitments to teacher time, equity, or climate responsibility.

The Fund Our Schools Blueprint is an attempt to break that loop by treating those three things as **hard constraints**—design filters that proposals must pass, not slogans to print on the last slide.

1.3 Why AI and Digital Infrastructure Now?

AI and digital infrastructure are not waiting for us to finish this debate. They are already here, in everyday tasks:

- Teachers use generative tools and search to find materials, differentiate assignments, translate communication, and draft feedback.
- Students use AI to get explanations, write, code, summarize, and, yes, sometimes to avoid doing the work themselves.
- Schools and systems rely on platforms for grading, communication, attendance, behavior tracking, and learning management.
- Vendors position themselves as essential infrastructure—"you can't run a modern school without us"—and build long-term lock-in by controlling data, identity, and workflows.

Generative AI pushes this further. It lowers the cost of producing text, images, and code. Used well, it can help teachers reclaim time from repetitive tasks and support students who would otherwise go without extra help. Used badly, it can intensify work, expand surveillance, and quietly deskill professional judgement—especially if it is built into systems whose real priorities are speed, metrics, and cost cutting.

None of this is neutral for the climate. Devices, networks, and data centers have embodied and operational emissions. As AI becomes something students and staff use every day, those emissions become part of education's climate footprint.

In parallel, many jurisdictions are already spending heavily on infrastructure, climate, and technology. That creates a window where the big architectural decisions—about devices, connectivity, AI, energy, and governance—can either:

- Lock in a fragmented, vendor-centric future that keeps teacher time, equity, and climate as side issues; or
- Build **public, mission-driven infrastructure** that puts young people, educators, libraries, and communities at the center.

This Blueprint assumes that AI and digital systems in public K–12 education are not going to vanish. The real question is **how** they expand and **who they serve**.

1.4 Research Questions

This thesis treats the Fund Our Schools Blueprint as a **design-based research artifact**. It is a system-level design, backed by transparent assumptions and basic modeling, that can be tested, critiqued, and adapted.

It is organized around three research questions:

1. **Architecture**
    - What would it mean, in concrete terms, to design a national AI and digital infrastructure for public K–12 education that treats **teacher time**, **equity**, and **climate responsibility** as non-negotiable constraints?
2. **Economics and climate**
    - Under what planning-level conditions is such an infrastructure **fiscally and climatically plausible** if financed by a **Fund Our Schools Permanent Fund**?
3. **Governance, labor, risk, and research**
    - What **governance**, **labor**, **data and AI**, and **risk** tools would be needed to make these commitments real and enforceable over time, and how can the Blueprint itself generate an agenda for empirical research and evaluation?

Chapters 2 and 3 lay the groundwork—reviewing the literature and setting out the design-based systems method and planning assumptions. Chapters 4, 5, and 6 answer the architecture, economics, climate, governance, and labor parts at the level of system design. Chapter 7 then answers the research questions directly and turns the Blueprint into a challenge.

1.5 Value Commitments

This Blueprint is not pretending to be value-neutral. It is built around explicit commitments that drive every design choice.

Teacher time and dignity
Teacher time is treated as a finite resource, not an infinite "input" that can always be stretched a little more. The goal of this Blueprint is not to maximize "AI usage." The goal is to **return time and attention to the work only humans can do**: building relationships, exercising judgement, supporting students and families, working with colleagues, and being part of their communities.

Any design that increases teacher workload without clear reductions elsewhere is treated as a **failure**, not a side effect.

Equity and public purpose
Public K–12 education is a **public good**. AI and digital infrastructure should strengthen that public purpose, not hollow it out.

Equity here is not a checkbox about who technically "has a device." It is about **who has reliable, supported access**, who has a voice in design and governance, who gets the most meaningful uses of AI, and who is most visible (and vulnerable) in data systems.

This Blueprint is especially attentive to communities facing structural disadvantage—by race, class, language, disability, immigration status, gender, and geography—and to the ways discipline, data, and infrastructure have historically been used to manage and exclude those communities.

Climate responsibility and intergenerational justice
AI and digital infrastructure have a real climate footprint. Treating that as somebody else's problem is no longer acceptable.

The Blueprint takes climate as a **hard constraint**: the program's own emissions from devices, connectivity, and AI workloads must be more than covered by the **Solar Schools & Climate Spine** over time. The goal is not just "do less harm," but **net-negative design within the program boundary**, while delivering visible local benefits to the communities that host the infrastructure.

Democratic governance and worker power
Infrastructure decisions are political decisions. Who sits on boards, who signs contracts, who sets KPIs, and who can say "no" all matter.

The Blueprint assumes that teachers, unions, students, families, librarians, and community organizations should be **inside** those decisions, not reacting from the outside. Non-coercion, anti-surveillance clauses, AI & Workload Steward roles that report to educators, and challenge mechanisms are treated as structural, not optional extras.

These commitments—teacher time, equity, climate, and democratic governance—are not just ideals. In this design, they are the **filters** any proposal must pass through.

1.6 The Fund Our Schools Blueprint in Brief

At a high level, the Fund Our Schools Blueprint is a **four-layer architecture** for AI and digital infrastructure in public K–12 education and libraries, backed by a **$150 billion permanent fund** with an expected ≈**$6 billion annual payout** under a conservative 4% payout rule.

The four layers are:

1. **Teacher Time Layer**
    - Stable devices and curated AI co-pilots for teachers;
    - Protected, paid learning time and experimentation space;
    - AI & Workload Steward roles that map workload and co-design better workflows with teachers;
    - A hard rule that new tools must be matched with **removal or reduction of obsolete tasks**, plus non-coercion, and anti-surveillance protections.
2. **Connected Student Cohort & AI Literacy Layer**
    - Each year, at least one **national Connected Student Cohort** (for example, one grade band) receives:
        - Devices that meet agreed specs;
        - Home connectivity support where needed;
        - Access to AI tools aligned with national AI literacy and governance standards.

    - Cohort teachers are supported through the Teacher Time Layer and AI literacy resources. Cohorts “stack” over time, expanding coverage while staying within cost and climate limits.
3. **Solar Schools & Climate Spine**
    - A program of solar, efficiency, and local climate projects anchored in schools and libraries;
    - Climate investments sized so that, under conservative assumptions, program-level coverage ratios (emissions mitigated vs program emissions) are **>1.0 in all scenarios**, rising toward ≈**1.5–1.6** in Extended scenarios;
    - Local projects that also deliver shade, resilience, and co-benefits to communities.
4. **Libraries & Community Layer**
    - Libraries and community organizations as **shared access points and AI literacy hubs**;
    - Infrastructure and staff time to support students, families, and educators;
    - Roles in governance, challenge mechanisms, and risk monitoring.

Chapters 4 and 5 translate these layers into three integrated scenarios**—Lean, Core, and Extended**—all of which fit within an expected ≈$6B annual payout and achieve net-negative climate design within the program boundary under the assumptions specified. All three scenarios include all four layers; what changes is **intensity and coverage**, not the basic architecture.

Taken together, the Blueprint is meant to read as something simple but demanding:

Here is one way to fund and build AI and digital infrastructure so that it is good for teachers, good for students, good for local jobs and communities, and good for the climate, without blowing the budget.

1.7 Methodological Stance: Design-Based Systems Blueprint

This is not a traditional empirical thesis with a single dataset and a regression table at the end. It is also not just an essay of opinions about AI in education. Methodologically, it sits in between.

The Fund Our Schools Blueprint is best understood as a **design-based systems blueprint**:

- It **synthesizes** existing research on teacher work and attrition, digital divides, AI and productivity, AI in education and AI literacy, education finance and permanent funds, climate and solar schools, and governance/ethics/labor.
- It uses that synthesis as a **constraint surface**—a way of mapping “doable but risky,” “doable and promising,” and “not acceptable” design moves.
- It constructs a **detailed system design** (the four-layer architecture plus fund, governance, labor, and risk structures).
- It **parameterizes** key elements—costs, climate impacts, coverage ratios—using transparent, conservative assumptions.
- It makes governance, labor, and risk structures part of the design, not add-ons.

- It positions the Blueprint as both **proposal and research artifact**: something that can generate testable questions, be re-run with different parameters, and be used as a benchmark for alternative designs.

This stance implies a few things clearly:

- The Blueprint is **normative and analytical**. It starts from values—teacher time, equity, climate responsibility, democratic governance—and then asks what designs are consistent with them.
- The unit of analysis is **system architecture**, not a single app or intervention.
- Design and research are intertwined: clever design needs iteration and critique; good research can be structured around comparing design choices and alternatives.

Chapter 3 makes this method explicit, including how assumptions were chosen, how cost and climate models were constructed, how governance and risk tools were designed, and how AI assistance was used in drafting and critique.

1.8 What This Blueprint Does and Does Not Claim

The Fund Our Schools Blueprint is trying to be both **bold** and **honest**. This section draws a hard line between what it is claiming and what it is not.

1.8.1 What this Blueprint claims

Existence and coherence

- There exists at least **one** internally coherent way to organize national AI and digital infrastructure for public K–12 education and libraries around teacher time, equity, and climate responsibility: the four-layer, permanent-fund-backed Fund Our Schools Blueprint.

Planning-level fiscal and climate plausibility

- Under the planning assumptions specified in Chapters 3 and 5, with a mission-locked **$150B** Fund Our Schools Permanent Fund using a **4% payout rule**, Lean, Core, and Extended scenarios can plausibly be financed with an expected ≈**$6B** annual payout **while achieving net-negative climate design** within the defined program boundary.

Governance and labor feasibility at the level of design

- It is possible to specify a **multi-level governance and labor architecture—**including teacher and community representation, non-coercion and anti-surveillance protections, data and AI governance, KPIs, failure conditions, challenge mechanisms, and risk registers—that makes teacher time, equity, and climate commitments visible and contestable over time.

Usefulness as a research artifact and challenge

- The Blueprint can serve as:
  - A generator of concrete **research questions**;
  - A **comparative baseline** for alternative architectures and funding models;
  - A practical **toolkit** for partial implementations (for example, piloting one layer with strong governance).

These are **conditional** claims. They depend on the assumptions and parameters set out in the thesis. They are designed to be contested and refined, not taken as the final word.

1.8.2 What this Blueprint does not claim

The Blueprint explicitly does **not** claim that:

- The Fund Our Schools Blueprint **will** be implemented, funded, or politically accepted.
- Permanent funds are always superior to other funding mechanisms, or that **$150B** and **4%** are uniquely correct.
- The modeled scenarios will automatically yield specific, measured improvements in learning, wellbeing, or retention without further empirical work.
- Political, institutional, and economic obstacles are minor or easily overcome.
- All communities or countries should adopt the same architecture, governance, or labor arrangements.

Where the Blueprint describes outcomes, it does so in terms of **plausibility** and **design intent**, not prediction or guarantee.

1.8.3 How to disagree with this Blueprint

This Blueprint is deliberately constructed to be disagreeable in **productive** ways. To disagree with it, a reader might, for example:

- Challenge its **values** (for instance, by explicitly prioritizing short-term test scores or narrow cost-efficiency over teacher time, equity, and climate).
- Propose a different **architecture** (for example, a universal 1:1 device model with thinner supports, or a design without a climate spine).
- Propose different **funding models** (for example, annual appropriations or bonds) and show how they would support comparable commitments.
- Offer alternate **governance and labor arrangements** and explain why they better protect teachers, students, and communities.
- Contest **assumptions and parameters** in the cost and climate models and propose more accurate or more just alternatives.

Appendix F offers a simple RQ–evidence–limits table and a short guide to “how to disagree,” not because disagreement is a problem, but because the Blueprint is meant to surface **competing designs**, not to close debate.

1.9 How to Read This Blueprint

Not every reader will care about every chapter equally, and not everyone has time to read a systems blueprint end to end. This section offers a straightforward guide.

If you care most about **teacher work, burnout, and labor protections**:

- Start with Chapter 1 (for framing) and Sections 2.1 and 2.7 (research on teacher work, datafication, labor, and governance).
- Read Chapter 4.2 (Teacher Time Layer) and Chapter 6 (governance, labor, challenge mechanisms).
- Skim Appendices C–E for KPIs, failure conditions, and risk tools.

If you care most about **devices, connectivity, AI tools, and AI literacy**:

- Read Sections 2.2–2.4 (devices and connectivity, AI and productivity, AI in education and AI literacy).
- Then Chapter 4.3 (Connected Student Cohort & AI Literacy Layer) and Chapter 4.5 (Libraries & Community Layer).

If you care most about **funding, jobs, and climate**:

- Read Sections 2.5–2.6 (education finance, permanent funds, climate, and solar schools).
- Then Chapter 5 (economics, jobs, and climate modeling) and Appendices A–B for detailed tables.

If you care most about **governance, data and AI governance, and risk**:

- Read Section 2.7 (governance, ethics, equity, and labor in AI and education).
- Then Chapter 4.7 (data and AI governance at the architecture level), Chapter 6 (governance, labor, and risk), and Appendices C–E.

If you want the **shortest** possible version:

- Read the Abstract, the Executive Summary, Sections **1.4–1.8**, and Chapter 7.

The Blueprint is long because it tries to spell out an entire system in enough detail to be auditable and reusable. You do not have to read it cover to cover to use it. Different readers—teachers, union leaders, policymakers, librarians, community organizers, funders, and researchers—can start from the sections that matter most to them and treat the rest as a reference.

Chapter 2 now turns to the literature that motivates and constrains this design. Chapter 3 then lays out the design-based systems method and planning assumptions used to construct the Fund Our Schools Blueprint.

Chapter 2 – Literature Review: Teacher Time, Devices, AI, and Infrastructure

2.0 What this chapter does

This chapter is the "what we already know" backbone for the Blueprint.

It pulls together seven strands of work that matter for what follows:

1. **Teacher work, burnout, and attrition**
2. **Devices, connectivity, and digital divides**
3. **AI and productivity in knowledge work**
4. **AI in education and AI literacy**
5. **Education finance, endowments, and permanent funds**
6. **Climate, infrastructure, and solar schools**
7. **Governance, ethics, equity, and labor in AI and education**

The short version:

- None of the technologies or funding mechanisms do anything by themselves.
- Outcomes depend on **how** they are organized, **who** they serve, and **who has power** over them.
- Taken seriously, the existing research pushes us toward treating teacher time, equity, climate, and governance as **design constraints**, not afterthoughts.

For each strand, this chapter:

- Summarizes key findings and debates;
- Flags where evidence is weak, contested, or overhyped;
- Spells out explicit implications for the Fund Our Schools Blueprint: a four-layer, permanent-fund-backed architecture.

Sections **2.8–2.10** pull the strands together, identify what is missing, and show how that gap motivates the design-based systems Blueprint approach in Chapter 3.

2.1 Teacher work, burnout, and attrition

Research on teacher work, burnout, and attrition has been consistent for years: **teachers are overworked, and it is structural, not personal.**

Large-scale studies document:

- Long working hours and "always on" expectations;

- High emotional load and role overload;
- Especially heavy burdens in high-poverty schools and hard-to-staff subjects (Ingersoll, 2001; OECD, 2019; Darling-Hammond, 2010).

These are not one-off bad years; they are patterns:

- Early-career teachers, those in high-poverty schools, and teachers in math, science, and special education are more likely to leave or transfer (Ingersoll & May, 2012).
- Turnover hits students and schools hardest where conditions are already toughest.
- Leaving is often about **support, autonomy, workload, and leadership**, not just “grit” or individual resilience (Ingersoll, 2001).

Workload and burnout are also **deeply unequal**:

- Teachers working with communities facing poverty, discrimination, and instability often juggle more complex coordination with social services, more emergencies, and less stable staffing.
- They do more emotional and invisible labor with fewer supports.
- That raises blunt equity questions: *who* is asked to do the hardest work, under the worst conditions, and what does that say about the system?

Digital tools have not magically fixed this.

- Time-use surveys and qualitative accounts show that new platforms often **add** data entry and monitoring tasks without subtracting anything (OECD, 2019).
- “Efficiency” metrics can pressure teachers to squeeze more into the same hours instead of actually returning time.
- Many teachers say they have neither the time nor the discretion to adapt tools to their actual workflow, so tools become just one more thing to click through.

Implications for the Blueprint

This strand is why the Blueprint puts **Teacher Time** at the base of everything.

It motivates decisions to:

- Treat **teacher time and autonomy as constraints**, not as outcomes to measure later. If a design increases workload with no offset, it is treated as a failure, not a “trade-off.”
- Make the **Teacher Time Layer** foundational (Chapter 4.2), with explicit aims to return time and strengthen professional judgment.
- Make **AI & Workload Steward roles** and **paid learning time** core components, not nice-to-have add-ons (Ch. 4.2; App. A).
- Tie **KPIs and failure conditions** directly to workload, burnout, autonomy, and perceived coercion, not just to usage rates or test scores (App. C).
- Build in **non-coercion and anti-surveillance protections**, so AI is not used for covert speed-up or micromanagement (Ch. 6.5).

In plain language: if the math “works” but teacher workload gets worse, the Blueprint treats that as the design failing—not the teachers.

2.2 Devices, connectivity, and digital divides

Many systems have poured money into devices, connectivity, and platforms. The research says: **these are necessary, but nowhere near sufficient.**

Key points:

- Device rollouts and 1:1 programs can help, but effects on achievement are usually **modest and highly contingent** on implementation (Means et al., 2010).
- Access to **reliable devices, connectivity, repair, and support** remains uneven across schools and households.
- Even where devices are present, **time, confidence, and institutional trust** shape who benefits.

Digital divides run deeper than “who has a laptop”:

- There are **“second-level” divides** in skills, support, and types of use.
- Students with more support at home and in school are more likely to use devices for creative, higher-order work.
- Others get pushed into drill, remediation, or monitoring (Williamson, 2017).
- These patterns track existing inequities—income, race, disability, language, geography.

Connectivity is still a pain point:

- Families may share one device across siblings; rely on unstable broadband; or face data caps.
- Even when low-cost or subsidized offers exist, **paperwork, mistrust, and time** can be real barriers.
- When home connectivity is unreliable, the promise of “anywhere learning” or AI support becomes a promise for someone else’s kid.

Implications for the Blueprint

The Blueprint responds by redesigning the whole “who gets what, when” story:

- Organizing access around a **Connected Student Cohort & AI Literacy Layer** (Ch. 4.3) that guarantees **devices, connectivity, and AI literacy supports** for at least one national cohort per year, instead of spreading everything thinly across all grades at once.
- Treating **reliability, repair, and support as funded infrastructure**, not “we’ll figure it out later” (App. A).

- Building **home connectivity supports and community access** through libraries and partners into the design, instead of assuming families will absorb the costs (Ch. 4.3, 4.5).
- Using **equity-sensitive KPIs** (for example, device access and connectivity by subgroup) and failure conditions to catch divides as they re-emerge (App. C).

Later chapters make this visible in the **cohort model** and in the decision to treat devices and connectivity as **infrastructure with long-term support**, not one-off gadget drops.

2.3 AI and productivity in knowledge work

Outside education, the early research on generative AI and productivity is clear on one thing: **it changes how knowledge workers spend their time**—but not always in simple "time saved" ways.

Experimental studies of tasks like drafting, editing, and summarizing show:

- Meaningful productivity gains, especially for less-experienced workers;
- Sometimes lower variance—AI can lift the floor for weaker performers (Noy & Zhang, 2023; Brynjolfsson, Li, & Raymond, 2025);
- Changes in **how** people work: some cognitive load moves, some disappears, and some just comes back in a different shape.

The broader digitalization and automation literature reminds us:

- Technologies rarely "just save time." They also create **new tasks and expectations**, or raise the bar on what "good" looks like.
- Automation can free people for more complex, relational work; it can also lead to speed-up, new monitoring tools, or deskilling, depending on **work design, incentives, and worker voice**.
- In public and professional sectors, there is a long history of tech being used to justify **staff cuts, tighter control, and performance metrics**, not better conditions.

Where AI tools roll out without clear guardrails, people worry about:

- Being evaluated or disciplined based on tool data;
- Being expected to do more work in the same hours;
- Losing control over professional judgment.

Trust drops, even when the tools are genuinely helpful for some tasks.

Implications for the Blueprint

The Blueprint handles all of this by taking a **"co-pilot under teacher control"** stance:

- Generative AI is treated as a **potential co-pilot** for teacher tasks like drafting, differentiation, summarizing, translation, and information retrieval.
- AI is positioned as **optional, teacher-controlled support** in the Teacher Time Layer, **not** as a supervisor, evaluator, or grading authority (Ch. 4.2).
- The “gain” we care about is **reclaimed time and higher-quality planning, feedback, and communication**, not “proof” that we can increase class sizes or cut staff (Ch. 3.3, 5.7).
- Governance and labor sections **explicitly prohibit** using co-pilot telemetry for high-stakes evaluation or covert monitoring without additional justification and negotiated safeguards (Ch. 6.4–6.5).
- Planning models assume **conservative time savings** and recognize the real risk that badly designed AI deployments just shift workloads around (Ch. 5.2).

Put simply: the Blueprint does not use “AI productivity” as a polite way to say “do more with less.” It treats AI as **in service of teacher time and human judgment**, or it does not belong.

2.4 AI in education and AI literacy

The AI-in-education literature is messy and contested.

On the hype side, we see:

- Promises of personalized learning and adaptive tutoring;
- Data-driven insights that will supposedly transform instruction.

On the caution side, we see:

- Concerns about bias and uneven impacts;
- Surveillance and data trails;
- Erosion of human relationships in classrooms (Holmes, Bialik, & Fadel, 2019; Williamson, 2017, 2019).

Empirical results are mixed:

- Many tools show **modest or uneven effects** on test scores.
- Implementation challenges are everywhere, especially when AI is bolted onto existing structures of time, schedules, and testing (Means et al., 2010).
- Gains, when they appear, tend to depend on **teacher support, alignment with curriculum, and local context**.

At the same time, there is a growing body of work on **AI literacy**:

- Students, educators, and communities do not just need access to tools; they need a way to **understand, critique, and shape** them (Long & Magerko, 2020).

- AI literacy includes technical ideas (data, training, bias, uncertainty) and social ones (power, surveillance, consent, environmental impact).
- It is not just about efficiency or coding; it is also about **creative and civic uses** of AI.

There is also a rising concern about **data governance**:

- How student data is collected, linked, and reused;
- How long it sticks around;
- How it may show up later in life—in employment, higher education, or other systems (Citron & Pasquale, 2014; Veale, Binns, & Edwards, 2018).

Implications for the Blueprint

This strand shapes several big design choices:

- **AI literacy becomes a program outcome**, not a side project. It is embedded in the **Connected Student Cohort & AI Literacy Layer** and supported by libraries and community partners (Ch. 4.3, 4.5).
- AI literacy frameworks explicitly include **critical, ethical, and civic dimensions**, not just "how to use the tool" (Ch. 4.3; App. C).
- Instructional AI tools are kept in **lower-stakes co-pilot roles**—no fully automated high-stakes grading, discipline, or behavioral scoring (Ch. 4.2, 6.4).
- Data governance rules set strong limits on **data retention, secondary use, and cross-system linkage** for student and teacher data (Ch. 6.4).

In other words, the Blueprint treats AI literacy, and data governance as **core infrastructure design problems**, not issues to fix after deployment.

2.5 Education finance, endowments, and permanent funds

Education finance research covers a familiar toolbox:

- Annual appropriations and operating budgets;
- Capital bonds for buildings and large projects;
- Various revolving funds and special-purpose endowments.

Traditional K–12 funding leans heavily on **short-budget-cycle money**:

- Annual budgets and time-limited grants;
- Political swings that change priorities every few years;
- Pressure to fund visible programs now rather than long-lived infrastructure.

This makes it hard to:

- Plan multi-decade infrastructure that spans devices, networks, solar, and buildings;
- Provide **stable supports for teacher time and professional development**;
- Invest in climate and resilience projects that pay off over long horizons.

Permanent funds and endowments sit at the edge of this world:

- Some jurisdictions use permanent funds (for example, natural resource funds, public endowments) to provide long-run support for public services.
- The literature highlights **pros and cons**:
    - Pros: stability, intergenerational equity, protection from some short-term shocks.
    - Cons: risk of **mission drift**, lack of accountability, political attempts to raid the corpus or re-purpose the fund.

Implications for the Blueprint

The Blueprint uses this literature to justify, and **discipline**, the idea of a permanent fund:

- It proposes a **$150B Fund Our Schools Permanent Fund** with a **4% payout rule** and conservative assumptions, rather than a vague “big fund” (Ch. 5.4).
- The fund’s mission is **narrow and explicit**: to finance the four-layer architecture and the governance, labor, data & AI, KPI, failure, challenge, and risk structures needed to uphold teacher time, equity, and climate commitments in public K–12 and libraries (Ch. 5.4, 6.2).
- Mission lock and governance design aim to minimize mission drift and keep the fund from becoming a generic slush fund.
- The Blueprint does **not** say permanent funds are always best; it offers this as one way to make **long-horizon commitments legible and testable** (Ch. 1.8, 5.7).

This strand is the backbone for the **fund math** in Chapter 5 and the governance design in Chapter 6.

2.6 Climate, infrastructure, and solar schools

Education does not happen in a vacuum; it happens in **buildings and neighborhoods** that are already feeling climate impacts.

Research on climate, infrastructure, and solar schools shows:

- School and community buildings are major energy users with real emissions footprints;
- Many school buildings are old, inefficient, and poorly adapted to heat, smoke, flooding, or other climate stresses;
- Solar and efficiency projects at schools and libraries can cut emissions, lower energy bills, and provide visible, local climate education opportunities (Kandt, 2011; SEIA & Generation180, 2020; IPCC, 2022).

There is also a justice dimension:

- Schools serving low-income and marginalized communities are more likely to sit in hotter, more polluted, or more flood-prone areas, and less likely to have upgraded infrastructure.
- Students in these schools may experience more **heat days, air-quality issues, and disruptions**, while seeing fewer visible investments.

Work on net-zero and net-negative design suggests:

- It is technically and economically possible to design infrastructure packages where **mitigation and efficiency investments exceed program emissions**, under realistic assumptions (IPCC, 2022).
- Doing this requires treating climate as a **first-order design constraint**, not an "if we get around to it" issue.

Implications for the Blueprint

This strand explains why the climate spine is not optional:

- The Blueprint includes a **Solar Schools & Climate Spine** as one of the four main layers (Ch. 4.4).
- The climate spine includes solar, efficiency, and local climate projects at schools, libraries, and community sites, plus a cautious removals margin.
- Climate accounting is done at the **program level**: program emissions (E_{prog}) from devices, connectivity, and AI workloads; mitigation and avoided emissions (E_{mit}) from the climate spine.
- The design aims for **coverage ratios (E_{mit} / E_{prog}) > 1.0** in all scenarios and **≈1.5–1.6** in Extended scenarios, making the program net-negative within its boundary (Ch. 5.5).

The message is simple: if we are going to build AI and digital infrastructure for schools, **we might as well design it, so the climate math makes sense too**.

2.7 Governance, ethics, equity, and labor in AI and education

Finally, governance, ethics, equity, and labor literature tackles the big question:

When we build data and AI systems around people, who ends up scored, watched, and controlled—and who gets to say no?

Critiques of datafication and algorithmic control warn about:

- "**Scored societies**," where invisible scores shape access to services and opportunities (Citron & Pasquale, 2014).
- Privacy and re-identification risks, especially when "anonymous" data can be reverse-engineered (Veale et al., 2018).
- Platform power: vendors and central agencies accumulating leverage over data, interfaces, and decisions (Williamson, 2017, 2019).

Labor and work-design studies show:

- Digital systems can **intensify work**, expand monitoring, and deskill roles.
- Or they can enhance autonomy and support judgment and collaboration.
- Outcomes depend heavily on **governance, worker voice, unions, and bargaining**.

Equity and justice perspectives emphasize:

- Marginalized communities are often **over-represented in the data used for monitoring and prediction**, and **under-represented in governance**.
- This creates feedback loops: the communities most surveilled and scored have the least power to shape or contest systems.

Implications for the Blueprint

This strand shapes the governance architecture and the non-negotiables around AI and data:

- Governance is **multi-level**, with a Fund Board, National Council, regional councils, and Local Fund Our Schools Committees, each with formal roles for teachers, unions, students, families, libraries, and community organizations (Ch. 6.2–6.3).
- Data and AI governance includes **Data Purpose Schedules, strict limits on data collection and use, interoperability and exit rights, and strong protections against surveillance and coercive uses** (Ch. 4.7, 6.4).
- Labor protections treat **teacher power as structural**, not decorative: non-coercion clauses, steward roles, and challenge mechanisms are built into the design rather than left to later bargaining (Ch. 6.5–6.6).
- KPIs and failure conditions track **governance and participation** (for example, representation on councils, challenge use, and resolution), not just technical performance (App. C, D).

The Blueprint does not pretend governance eliminates politics. It tries to **make the fights honest and visible**: if teacher time, equity, and climate get eroded, it should show up in the data and be challengeable.

2.8 Synthesis and gaps: from pieces to a national Blueprint

Put together, these strands say:

- Teacher workload and burnout are **structural and unequal**, not randomly distributed.
- Devices and connectivity matter, but **implementation, support, and context** are decisive.
- Generative AI can change knowledge work but can also **intensify work, deskill professionals, or enable new surveillance** if misused.
- AI-in-education interventions have **mixed evidence** and demand much stronger attention to governance, ethics, and literacy.
- Traditional funding models struggle to support **long-lived, integrated infrastructure**.
- School and community infrastructure are key sites for **climate mitigation, adaptation, and learning**.
- Governance and labor design **determine** whether digital and AI systems support or erode professional autonomy and public purpose.

What is mostly missing in the existing work is an **integrated, national-scale design** that:

- Treats **teacher time, equity, and climate as hard constraints** on AI and digital infrastructure.
- Combines a **permanent-fund-style financial backbone** with a multi-layer infrastructure architecture.
- Embeds **AI literacy, data governance, and labor protections from the very start**.
- Has enough specificity in **costs, climate, and governance** to be contested, adapted, and re-run, instead of living at the level of slogans or small pilots.

The Fund Our Schools Blueprint is built to fill that gap—not as the “correct” design, but as **one worked, auditable instance** that brings these strands together in a single system.

2.9 Debates, critics, and conservative design choices

Because the underlying literatures are contested, the Blueprint takes a **conservative, precautionary stance** in a few key debates.

Devices and 1:1 skepticism

Critics note that big device initiatives:

- Often yield **modest or mixed impacts** on test scores.
- Can distract from other forms of learning.
- May deepen usage-quality divides when implementation is weak (Means et al., 2010; Williamson, 2017).

Blueprint stance:

- Devices and connectivity are treated as **necessary infrastructure**, but not as magic.

- The **Connected Student Cohort & AI Literacy Layer** focuses on **one national cohort per year**, pairs devices with **Teacher Time supports and AI literacy**, and **explicitly funds repair and support** (Ch. 4.3, 5.3).
- In other words: fewer shiny launches, more depth and staying power.

AI skeptics in education

Skeptics highlight:

- Biased outputs and opaque systems.
- Erosion of human judgment and over-reliance.
- Rapid, unregulated deployment (Holmes et al., 2019; Williamson, 2019).

Blueprint stance:

- AI is positioned as a **co-pilot**, not as a judge.
- High-stakes automated grading, behavior scoring, and predictive risk modeling are **explicitly out of bounds**.
- Non-coercion rules and strong governance for vendors and tools are baked in (Ch. 4.2, 4.7, 6.4–6.5).
- AI literacy is **critical and reflective**, not cheerleading by default (Ch. 4.3).

Permanent fund and finance critiques

Critiques of permanent funds point to:

- Questions about democratic accountability and who controls the corpus.
- Opportunity costs—what else could have been done with the capital.
- Mission drift and political attempts to repurpose funds.

Blueprint stance:

- The Fund Our Schools Permanent Fund uses a **familiar payout rule (4%)**, a **clearly defined mission**, and **multi-stakeholder governance** with transparent KPIs and failure conditions (Ch. 5.4, 6.2).
- It is presented as **one workable model**, not as the only or universally best approach (Ch. 1.8, 5.7).

Datafication, surveillance, and labor

Critiques of datafication warn against:

- “Scored societies,” privacy risks, and worker control via data (Citron & Pasquale, 2014; Veale et al., 2018; Williamson, 2017).

Blueprint stance:

- Strong data governance and **clear limits on surveillance uses**.
- Opt-out and exit rights where feasible.
- Labor protections that treat AI usage as a matter for **negotiation and consent** (Ch. 6.4–6.6).
- Governance and challenge mechanisms designed so disagreement has somewhere to go **besides burnout or quitting** (Ch. 6.6; App. D–F).

Across these debates, the Blueprint:

- Assumes **modest direct effects** from AI and devices unless there's compelling evidence otherwise.
- Uses **conservative financial and climate parameters**.
- Treats governance, labor, and measurement as **first-order design elements**.
- Frames itself as **one contestable design**, not a universal prescription.

2.10 Chapter summary and bridge to Chapter 3

This chapter has:

- Reviewed seven strands of literature on teacher work, digital and AI infrastructures, education finance, climate and solar schools, and governance, ethics, equity, and labor.
- Highlighted how these strands converge on the importance of **workload, support, governance, long-horizon funding, climate responsibility, and job creation**.
- Identified a gap: the absence of an integrated, teacher-first, climate-responsible AI, and digital infrastructure design for public K–12 and libraries, at national scale.
- Explained how the Fund Our Schools Blueprint responds with a **conservative, precautionary, but concrete** design stance.

The core claim coming out of this chapter is:

The existing research and practice, taken together, justify exploring a national-scale Blueprint that
– treats teacher time, equity, climate, and jobs as design constraints;
– uses a permanent fund and four-layer architecture to structure AI and digital infrastructure;
– embeds AI literacy, data governance, and labor protections from the start;
– is specified enough in costs, climate, and governance to be audited, contested, and reused.

Chapter 3 builds directly on this foundation. It explains:

- The **design-based systems Blueprint method** used to build the Fund Our Schools Blueprint.
- The **theory of change and logic model** connecting infrastructure to outcomes.
- The **planning assumptions and parameters** behind the cost, jobs, and climate models.

- How **governance, labor, and risk design methods, positionality, and AI-assisted workflow** were handled.

Together, Chapters 2 and 3 give the **evidentiary and methodological scaffolding** for the system Blueprint in Chapter 4.

Chapter 3 – Methods and Design Approach

3.1 What this chapter does

This chapter is me showing my work.

Chapter 2 laid out the research that boxes us in: what we already know about teacher time, devices, AI, finance, climate, governance, and labor. Chapters 4–6 describe the actual system, the math, and the governance.

This chapter sits in the middle and explains **how** I got from that evidence to this Blueprint. It covers:

- The **design-based systems blueprint method** I am using.
- The **theory of change and logic model** underneath the four layers.
- The **planning assumptions and parameters** that drive the cost and climate math.
- How the **Lean, Core, and Extended scenarios** were built.
- How **governance, labor, and risk tools** were designed alongside the technical pieces.
- How **AI tools** showed up in my drafting process, and where the human limits and biases are.

The point is not to pretend this is a full-blown methodology textbook. The point is to make the moves and assumptions visible enough that other people can **re-run the model, argue with it, or adapt instead** of just react to vibes.

3.2 Design-based systems blueprint method

This is not a randomized trial. It is not a purely speculative think piece either. I am treating the Fund Our Schools Blueprint as a **design-based systems blueprint**:

- It is a worked **system design**, not just a list of ideas.
- It is grounded in existing evidence and constraints.
- It is detailed enough to be **audited, challenged, and reused**.

3.2.1 Starting point: values and constraints

The method does not start by asking “What can AI do?” It starts with **values and hard constraints**, pulled from Chapter 1:

- **Teacher time and dignity**
- **Equity and public purpose**
- **Climate responsibility and intergenerational justice**
- **Democratic governance and worker power**

The core question is:

Given these values and constraints, what kinds of AI and digital infrastructure for public K–12 are even acceptable?

That flips the usual script. Instead of treating teacher time, equity, and climate as things we will measure "after implementation," they become **design filters**:

- If a proposed design **raises net workload** without clear benefits and protections → it fails.
- If it **deepens inequity** or dumps more risk on already-marginalized communities → it fails.
- If it **blows the climate budget** or hides emissions → it fails.

Those proposals do not go into the "maybe pile." They are ruled out or rewritten.

3.2.2 Using the literature as a constraint surface

Chapter 2 is not just a literature review for its own sake. It acts as a **constraint surface** for design:

- Research on **teacher work and attrition** rules out designs that quietly assume large "free" increases in teacher labor (Ingersoll, 2001; Ingersoll & May, 2012; OECD, 2019).
- Evidence on **devices and AI in education** warns against thin 1:1 device programs with no supports or governance (Means et al., 2010; Holmes, Bialik, & Fadel, 2019).
- Work on **climate and solar schools** sets realistic expectations for what school-based mitigation can deliver (IPCC, 2022; Kandt, 2011; SEIA & Generation180, 2020).
- Critiques of **datafication and platform power** rule out architectures that centralize control, expand surveillance, or sideline workers and communities (Citron & Pasquale, 2014; Williamson, 2017, 2019).

In practice, that means:

- The Blueprint does not get to assume miracle productivity gains for teachers.
- It does not get to pretend devices are magic.
- It does not get to call something "net-zero" just because it feels good.
- It does not get to ignore platform politics or surveillance.

The design must live **inside** those boundaries.

3.2.3 Iterative design moves

Inside that constraint surface, the method is basically:

1. **Propose a structural move**
    - Example: "Make teacher time a foundational layer."

    - Example: “Treat climate as a program responsibility, not an offset story.”
    - Example: “Use a permanent fund as the financial backbone.”
2. **Check against constraints and evidence**
    - Does this move worsen workload, equity, or climate?
    - Does it create obvious governance or labor problems?
    - Does it contradict what we already know from the literature?
3. **Put numbers on it**
    - Can we express this move in rough, transparent parameters?
    - Example: dollars per teacher per year; cohort size; number of schools; coverage ratio for solar.
4. **Test with simple models**
    - Does it fit inside a **$150B fund with a 4% payout** and an expected ≈**$6B** annual spend (Chapter 5)?
    - Does the climate spine deliver **E_mit / E_prog > 1.0** under conservative assumptions (Chapter 5)?
    - Do the governance and labor tools look remotely enforceable (Chapter 6)?
5. **Wrap in governance and labor**
    - What institutions, roles, and protections would we need—Fund Board, councils, Local Committees, stewards, union clauses—to keep this move pointed where it is supposed to go?
6. **Revise or reject**
    - If a move fails any of these checks, it gets rewritten or dropped.

When in doubt, the dial gets turned toward **simpler, better-governed, more conservative** assumptions—financially, climatically, and politically—rather than toward big bets that only work on optimistic settings.

3.2.4 Example: universal 1:1 vs. Connected Student Cohort

One concrete example:

- Early on, I tried a **universal 1:1 device and connectivity guarantee** for all students, all at once. Clean slogan, simple to explain.
- When I ran it through the filters, it broke.

Cost:

- With realistic unit costs and replacement cycles, universal 1:1 **maxed out or exceeded** what a cautious ≈$6B payout could safely support—especially if we also took teacher time, climate, and governance seriously.

Teacher time:

- Spreading resources thinly across all grades made it harder to fund strong **Teacher Time supports** and AI literacy at the same time.

- It tilted toward “lots of devices, shallow supports,” which is the story the literature warns us about.

Climate:

- A universal 1:1 surge up front accelerated device and workload emissions faster than climate projects could realistically catch up in early years.

So that move was rejected and reworked into the **Connected Student Cohort model** (Chapter 4.3):

- Each year, **at least one national cohort** (one grade band) gets a **full package**: devices, connectivity, and AI literacy, paired with strong Teacher Time supports.
- Other students still benefit from the underlying infrastructure and community investments, but the flagship support is sequenced.
- Cohorts **stack over time**, expanding coverage while staying inside financial and climate constraints.

Same values, same equity goals—but sequenced and governed in a way the math and the climate can handle.

3.3 Theory of change and logic model

The theory of change is not me promising guaranteed test score bumps. It is a structured story about how this infrastructure **could lead** to better conditions and outcomes if implemented well.

3.3.1 Core causal story

At a high level, the theory of change looks like this:

Infrastructure inputs

- Stable, long-horizon funding from the **Fund Our Schools Permanent Fund**.
- Devices, connectivity, AI co-pilots, solar and efficiency projects, and library/community infrastructure.

Immediate outputs

- **Rebuilt teacher workflows**, with some tasks partially automated or simplified.
- **Connected Student Cohorts** with devices, connectivity, and AI literacy.
- **Lower net energy use and emissions** for participating schools and libraries.
- **Multi-level governance and labor structures** in place (Fund Board, councils, Local Committees, stewards, KPIs, challenge tools).

Intermediate outcomes

- Improved teacher time and autonomy for planning, feedback, collaboration, and student support.
- More equitable access to meaningful, AI-supported learning opportunities.
- Increased climate resilience and reduced energy costs at school and library sites.
- Greater voice for teachers, students, families, libraries, and communities in decisions about infrastructure and AI.

Longer-term outcomes

- Better retention of teachers, especially in high-need schools and critical subjects.
- Narrowing of opportunity gaps linked to device access, connectivity, and AI literacy.
- A decarbonizing education infrastructure that is **net-negative** within its program boundary.
- AI and digital systems that feel **legitimate and accountable**, not imposed.

These are **hypotheses**, not guarantees. They drive the KPI design and research agenda in Chapter 7 and Appendix C.

3.3.2 Layer-specific pathways

Each layer has its own pathway.

Teacher Time Layer

- Inputs: teacher devices, curated co-pilots, paid learning time, AI & Workload Stewards, protected time, and roles.
- Outputs: redesigned workflows; fewer manual administrative tasks; structured space for experimentation.
- Outcomes: more time and energy for relational, instructional, and collaborative work; reduced burnout; improved retention, especially in high-need schools (Ingersoll & May, 2012).

Connected Student Cohort & AI Literacy Layer

- Inputs: devices and connectivity supports for the cohort; AI literacy curricula co-designed with teachers, librarians, and community partners.
- Outputs: students, families, and educators using AI tools critically and creatively, not just “using whatever’s there.”
- Outcomes: improved AI literacy; more equitable access to powerful tools; better alignment between out-of-school AI use and school expectations (Long & Magerko, 2020; Holmes et al., 2019).

Solar Schools & Climate Spine

- Inputs: solar installations, efficiency upgrades, and local climate projects at schools, libraries, and community sites.
- Outputs: lower energy bills, better comfort, and resilience (for example, cooling, air quality), visible climate action.
- Outcomes: net-negative program emissions; more legitimate AI and digital infrastructure ("we're not just burning more power for servers"); new learning opportunities and community pride (IPCC, 2022; Kandt, 2011).

Libraries & Community Layer

- Inputs: infrastructure, staffing, and programming for libraries and community organizations.
- Outputs: AI literacy and digital access hubs; public spaces for dialogue and learning; local governance roles.
- Outcomes: stronger bridges between schools, families, and communities; more resilient and distributed support networks.

3.3.3 Feedbacks and risks

The theory of change also names the ways this could **go sideways**:

- If AI tools are used to **intensify work or expand surveillance**, teacher trust collapses, and adoption stalls (Williamson, 2017).
- If climate benefits are **unevenly distributed**, equity goals get undercut and political support erodes.
- If governance bodies are **tokenistic** or challenge tools are ignored, vendor or central control fills the vacuum.

Those risks are exactly why we built:

- Non-coercion and anti-surveillance rules.
- Labor protections and steward roles.
- Climate coverage ratios and failure conditions.
- Challenge mechanisms and risk registers.

They are not decorative; they are there because the theory of change says things will break without them.

3.4 Global planning assumptions and parameters

The cost and climate modeling in Chapters 4 and 5 depend on a set of **global planning assumptions**. These are not forecasts. They are **simple, conservative inputs** that keep the Blueprint legible and re-runnable.

Appendix A documents them in more detail; this section gives the top-level picture.

3.4.1 Scale and system characteristics

The Blueprint uses a **U.S.-like system** as its reference case:

- ≈ **3.8 million** public K–12 teacher-equivalent positions;
- ≈ **3.8 million** students in a Connected Student Cohort;
- ≈ **100,000** public K–12 schools.
- ≈ **40,000** participating libraries and community partners.

These values are approximate, slightly padded, and rounded. They sit on the high side of recent NCES counts and are meant as transparent, conservative anchors, not an attempt to capture every staffing nuance in U.S. public education.

3.4.2 Cost parameters

Unit costs are grouped roughly as:

- Teacher devices and software (per teacher per year, including replacement and support).
- AI co-pilot services and infrastructure (per teacher per year).
- Paid learning time and AI & Workload Steward roles (per teacher and per steward per year).
- Student devices and connectivity for Connected Cohorts (per cohort student per year).
- Solar and efficiency investments (annualized per school/library).
- Library and community program costs.
- Governance, evaluation, and research overhead (as a percentage of direct program costs).

Where the literature or practice provides ranges, this Blueprint intentionally uses **conservative or mid–high estimates**. In other words, the model would rather **overestimate costs** than understate them.

3.4.3 Climate parameters

Climate modeling needs assumptions about:

- Emissions factors for **device manufacturing and use**.
- Energy use for **connectivity and AI workloads**.
- Solar system performance (capacity factor, degradation over time).
- Typical savings from efficiency upgrades in schools and libraries.
- Conservative sequestration and avoided emissions estimates for **local climate projects**.
- Grid emission factors aligned with **carbon-intensive (not best-case)** grids.

The Blueprint leans toward **under promising** on mitigation. If real-world solar and efficiency projects outperform these conservative assumptions, coverage ratios will come in **better than**

modeled. If they underperform, **failure conditions and risk tools** should catch that and force adjustments.

3.4.4 Measurement and instrumentation

Appendix C maps each KPI to **data sources and frequencies**. At a high level:

- **Teacher time and wellbeing:** surveys, time-use studies, administrative data.
- **Access and AI literacy:** administrative and survey data, disaggregated by equity-relevant groups.
- **Climate:** metered energy data, project-level monitoring, and modeled estimates.
- **Governance and participation:** administrative records, minutes, testimonies, process evaluations.
- **Incidents and risk:** audit records, incident reports, and challenge logs.

These choices reflect what is practically measurable at scale, not some fantasy dataset. They are meant as starting points that others can improve on.

3.5 Scenario construction: Lean, Core, Extended

Chapters 4 and 5 present three scenarios—**Lean, Core, and Extended**—that all use the same four-layer architecture, but at different intensities and coverage. This section explains **how** those scenarios were built.

3.5.1 Shared architecture, different intensity

All three scenarios share:

- The **Fund Our Schools Permanent Fund** as the financial backbone.
- The **four layers** and their core components.
- The commitment to **net-negative program-level climate design**.
- The same governance, labor, data & AI, KPI, failure, challenge, and risk structures.

They differ on two axes:

- **Intensity** – for example, hours of paid learning time per teacher, steward-to-teacher ratios, level of solar investment, depth of AI literacy supports.
- **Coverage** – for example, size and depth of the Connected Cohort each year; proportion of schools and libraries receiving climate investments; breadth of library/community programming.

3.5.2 Parameter banding

Scenario construction follows a consistent pattern:

1. **Set bands**
    - For each component, set a plausible **band**.
    - Example: 10–30 hours of paid learning time per teacher per year.
2. **Assign bands to scenarios**
    - **Lean** → lower end of bands (for example, 10–15 hours).
    - **Core** → mid-range (for example, around 20 hours).
    - **Extended** → upper range (for example, closer to 30 hours).
    - The same logic applies to cohort depth, climate investment levels, and library/community supports.
3. **Check against financial and climate constraints**
    - Aggregate costs and climate impacts for each scenario.
    - Compare against the expected ≈**$6B** annual payout and climate coverage targets.
    - If a scenario **breaches constraints**, dial back intensity or coverage starting with less critical elements—**not** by undercutting Teacher Time or climate commitments as the first move.

This creates scenarios that differ in a **structured, transparent** way instead of hidden tweaks.

3.5.3 Scenario roles

Each scenario plays a different role:

- **Lean**
    - The conservative baseline, especially useful in periods of financial stress or early implementation.
    - All four layers are present, and climate coverage stays >1.0, but at lower intensity and coverage.
    - Leaves a **large buffer** between total costs and the ≈$6B payout.
- **Core**
    - The default target under typical conditions.
    - Robust supports for teachers, students, climate, and community, with a **comfortable buffer** remaining.
- **Extended**
    - The upper-bound scenario.
    - High-intensity supports (for example, stronger steward coverage, deeper AI literacy, broader climate spine), with climate coverage ≈**1.5–1.6**.
    - Uses most of the available payout but still sits under ≈$6B. Treated as a **ceiling**, not a starting point.

Treating scenarios as explicit constructs, rather than fuzzy "we'll do more later" aspirations, lets governance bodies and unions argue over visible dials: **intensity, coverage, and buffers**, not hand-wavy promises.

3.6 Governance, labor, and risk design methods

Governance, labor, and risk tools are designed using the **same method** as the rest of the system. They are not bolted on; they are part of the architecture.

3.6.1 Design principles

Key principles:

- **Separation of roles and checks and balances**
  - Fund governance is **separate** from program governance.
  - Program governance is **multi-level**: national, regional/state, local.
  - Teacher and community power is represented at each level, not just “consulted.”
- **Integration of labor and data governance**
  - Non-coercion, anti-surveillance, and steward roles are built into the design, not left to local scrambling.
  - Data governance (Data Purpose Schedules, contracts, audit rights) and labor protections are treated as **infrastructure**, not optional policies.
- **Pre-commitment via KPIs and failure conditions**
  - Thresholds for “unacceptable drift” (for example, sustained increases in teacher hours, climate coverage dropping below 1.0, widening equity gaps) are defined **up front**.
  - Governance processes are required to respond when those thresholds are crossed.
- **Transparency and contestability**
  - Decisions, assumptions, risk registers, and KPI trends are documented, shared, and open to challenge.
  - Challenge mechanisms give unions, teachers, students, families, libraries, and community groups **structured routes** to push back on tools and policies.

3.6.2 Templates and reusability

Governance bodies, steward roles, challenge processes, and risk registers are instantiated via templates in **Appendices D and E**, including:

- Sample charters for the Fund Board, National Council, state/regional councils, and Local Committees.
- Sample position descriptions for AI & Workload Stewards.
- Model non-coercion and anti-surveillance clauses.
- Challenge forms and risk register structures.

These are deliberately **adaptable**. They show one way to make the design principles real. Jurisdictions can adjust them while keeping the core pieces—representation, protections, KPIs, failure conditions, and challenge routes—intact.

3.7 AI-assisted workflow and positionality

Because this thesis is about AI, I need to be honest about how AI showed up in the writing.

3.7.1 AI as drafting and critique assistant

Generative AI tools were used in **bounded** ways to:

- Explore alternative phrasings and structures for sections and headings.
- Help spot repetition, drift in terminology, or inconsistencies across chapters.
- Play adversarial reader— "what would a skeptical policymaker or examiner push on?"
- Help keep parameters (like **$150B**, **4% payout**, scenario cost bands, climate coverage ratios, and jobs ranges) consistent.

They were **not** used to:

- Generate empirical data or invent citations.
- Decide core value commitments, architecture, or funding models.
- Replace human judgment about politics, ethics, feasibility, or tone.

That mirrors the stance of the Blueprint itself: **AI is a co-pilot**, not the pilot. It can help with some cognitive grunt work, but it sits inside human judgment, governance, and labor protections, not outside them.

3.7.2 Positionality and limits

This Blueprint reflects my perspective, my lane, and my blind spots. Among other things:

- It is shaped by particular experiences with public education, labor politics, climate debates, and AI.
- It inevitably underweights concerns that are more visible from other vantage points—especially contexts that have not been centered in my own experience.
- It cannot claim to speak for all teachers, students, families, libraries, or communities, especially those most harmed by past policies.

The governance, labor, and challenge structures in Chapters 4 and 6 are designed in part to **correct for that**:

- People actually affected by implementations get clear ways to reshape, reject, or replace pieces of this design.
- Disagreement is treated as data, not as a problem to be smoothed over.

But none of that erases positionality. It just tries to make the Blueprint **contestable by design** instead of pretending it is neutral or universal.

3.8 Chapter summary and bridge to Chapter 4

This chapter has:

- Described a **design-based systems blueprint method** that starts from explicit values and constraints, and uses literature as a constraint surface.
- Set out a **theory of change and logic model** connecting four layers and a permanent fund to plausible improvements in teacher time, equity, climate responsibility, governance, and jobs.
- Documented **global planning assumptions and parameters** for scale, cost, and climate that are simple, conservative, and re-runnable.
- Explained how **Lean, Core, and Extended scenarios** share one architecture but vary intensity and coverage while staying under a ≈$6B payout and net-negative climate requirement.
- Described how **governance, labor, and risk tools** were designed using the same method—multi-level, worker-centered, data-governed, and challenge-ready.
- Clarified how **AI tools** were used as drafting and critique assistants within human judgment and clear ethical limits.

Together, Chapters 2 and 3 provide the **evidence and method scaffolding** for everything that follows.

Chapter 4 now turns to the **system itself**: the four layers in detail, how they interact, how they look under Lean, Core, and Extended scenarios, and how data and AI governance run through the architecture from the start.

Chapter 4 – System Blueprint: Layers, Scenarios, and Data & AI Governance

4.1 What this chapter does

Chapters 1–3 set the stage:

- Why we need a Blueprint now,
- What the research says we can and cannot pretend,
- How I have built this as a design that people can audit, argue with, and reuse.

This chapter finally shows **the system itself**.

It lays out:

- The **four-layer architecture**:
  - Teacher Time
  - Connected Student Cohort & AI Literacy
  - Solar Schools & Climate Spine
  - Libraries & Community
- How those layers look under **Lean, Core, and Extended** scenarios.
- How **data and AI governance** is baked into the architecture.
- How the layers interact **in real life**, not just in diagrams.
- How we handle **edge cases and opt-outs** instead of pretending one design fits everyone.

If Chapters 2–3 are the why and the how, this is the **what**: the actual structure we are putting on the table for America to say yes or no to.

4.2 Teacher Time Layer

The **Teacher Time Layer** is the foundation. If you skip this and jump straight to devices, AI, or solar, you are building on sand.

The whole point here is simple:

AI and digital tools should **give teachers time back and strengthen their judgment**, not spy on them, or squeeze more work out of them.

4.2.1 Core components

Across all scenarios, the Teacher Time Layer includes:

1. Devices and curated AI co-pilots for teachers

- A reliable, school-issued device that **just works**, funded as part of infrastructure, not as a one-off grant.
- A small, **vetted set of co-pilots** for tasks like drafting, differentiation, summarizing, translation, and information retrieval.
- Clear guidance on where co-pilots are helpful and where they are not allowed (for example, no high-stakes grading or covert monitoring).

2. Paid learning time and experimentation space

- **Protected, paid time** for teachers to learn, experiment, and design new workflows—individually and with colleagues.
- Time organized so that experimentation happens in **low-stakes settings** (co-design studios, collegial circles), not during unpaid evenings or "on your own time."

3. AI & Workload Stewards
Dedicated roles (funded by the Blueprint, not piled on top of someone's existing job) that:

- Map how time is being used.
- Identify high-burden, low-value tasks.
- Co-design new AI-supported workflows **with** teachers.
- Track whether promised time savings are real.
- Surface concerns about data, AI, and workload into governance structures.

These are not tech evangelists trying to juice "uptake." They are **workload advocates** whose job is to keep AI in line with teacher time and dignity.

4. Removal or reduction of obsolete tasks and tools

- Every time a new tool shows up, something old must go.
- The architecture **requires** explicit removal or reduction of outdated, redundant, or low-value tasks and systems.
- Time-use data and teacher feedback drive a running list of things to automate, simplify, share, or stop.

5. Non-coercion and anti-surveillance protections

- No AI usage quotas.
- Strict limits on using AI-generated data for evaluation or discipline.
- Bans on covert monitoring and intrusive tracking via Blueprint-funded tools.
- Clear rights to refuse unsafe or misaligned workflows, with challenge routes if there is a dispute.

This is the contract: **no "AI as boss," no "do more with less" hidden inside dashboards**.

4.2.2 How it feels in practice

In a **Core** district, a high school teacher might experience the Teacher Time Layer as:

- A school laptop with a small set of co-pilots embedded in tools they already use.
- Two or three blocks per term of **paid time** to try things, with a steward in the room and no pressure to perform.
- A local, public list of tasks the system is actively trying to eliminate.
- Confidence that usage data will not suddenly appear in an evaluation meeting.
- Visible union and steward presence whenever new tools are selected or rolled out.

You still have the hard parts of teaching. What you do not have is the same amount of pointless copy-paste, retyping, and platform-hopping.

4.2.3 Scenario differences

- **Lean**
  - Baseline teacher devices and co-pilots.
  - Modest but paid learning time.
  - Stewards covering clusters of schools.
  - Focus on taking out the **worst** tasks first.
- **Core**
  - Better devices and co-pilots.
  - More substantially paid learning time.
  - Stronger steward–teacher ratios.
  - Non-coercion and anti-surveillance clauses woven deeply into contracts and governance.
- **Extended**
  - High-intensity support, including **generous** paid learning time.
  - Stewards in most schools or small clusters.
  - More aggressive removal of legacy systems and busy work.
  - Extra room for teacher-led inquiry and research.

In all three scenarios, the Teacher Time Layer is **non-negotiable**. Nothing else in the Blueprint should be implemented without it.

4.3 Connected Student Cohort & AI Literacy Layer

Devices and AI do not do much if they show up scattered and unsupported. The **Connected Student Cohort & AI Literacy Layer** is how we keep this from becoming a thin 1:1 story.

4.3.1 Connected Student Cohort

Each year, the Blueprint funds at least **one national Connected Student Cohort** (for example, one grade band):

For each **student** in the cohort:

- A device meeting agreed specs.
- Home connectivity supports, where needed (subsidies, hotspots, or other mechanisms).
- Access to AI tools aligned with national AI literacy and data governance standards.

For each **teacher** of that cohort:

- Full access to the Teacher Time Layer.
- AI literacy resources and co-designed experiences linked to their actual curriculum.

Why the cohort model instead of “everyone at once”?

- It **concentrates resources** enough to provide meaningful support, instead of paper-thin coverage for all grades.
- Cohorts **stack over time**, expanding coverage while respecting cost, labor, and climate constraints.
- Cohorts create natural units for evaluation—longitudinal comparisons between cohort and non-cohort students, and across different implementation approaches.

4.3.2 AI literacy sequences

AI literacy here is not “click this button.”

For each Connected Cohort, the Blueprint supports:

- **Curriculum-integrated experiences**
  - Short sequences embedded in language arts, social studies, science, and other subjects.
  - Focused on how AI systems work, where they help, and where they harm.
- **Critical and civic elements**
  - Activities that tackle bias, surveillance, consent, environmental impacts, and power.
  - Discussion of where AI already shows up in schools, public services, and everyday life.
- **Teacher development**
  - Co-designed materials and learning sessions.
  - Space for teachers to adapt and extend AI literacy content.
- **Family and community engagement**
  - Library- and community-based sessions for families and caregivers.
  - Clear, low-jargon explanations of what tools are in play and how to raise questions or concerns.

AI literacy is treated as an **outcome of the Blueprint**, not a side project.

4.3.3 Scenario differences

- **Lean**
  - One cohort per year, baseline device, and connectivity.
  - Short but substantive AI literacy sequences.
  - Focus on **basic access and foundational understanding**.
- **Core**
  - One cohort per year with higher-quality devices/connectivity.
  - Richer AI literacy sequences, more cross-curricular work.
  - Stronger family programming and teacher supports.
- **Extended**
  - Steps toward multiple or overlapping cohorts.
  - Deeper AI literacy experiences across subjects and grades.
  - Broader family and community engagement, including co-taught sessions with libraries and community organizations.

4.4 Solar Schools & Climate Spine

The **Solar Schools & Climate Spine** connects AI and digital infrastructure to climate responsibility. It treats the program's own emissions as a **design problem**, not background noise.

This is also one of the clearest **jobs engines** in the Blueprint: solar installers, electricians, building engineers, maintenance staff, and local climate project teams all get long-run, place-based work out of this.

4.4.1 Components

Across scenarios, the Climate Spine includes:

- **Solar installations at schools and libraries**
  - Rooftop or ground-mounted systems sized to local conditions.
  - Tied to real energy meters and dashboards students can see.
- **Efficiency upgrades**
  - Lighting, HVAC, insulation, and control systems that reduce energy use and make buildings more livable (especially in heat and smoke).
- **Local climate projects**
  - Things like tree planting, shading structures, rain gardens, and resilience features.
  - Designed with communities, not dropped on them.
- **A cautious removals margin**
  - Limited, verifiable removals to cover residual emissions where needed.
  - Added carefully so we do not lean on offsets instead of actual emissions cuts.

The Climate Spine is **not** a separate feel-good project. It is one of the four layers, funded out of the same Permanent Fund and governed by the same structures.

4.4.2 Scenario differences (high level)

- **Lean**
  - Targeted solar and efficiency investments at a subset of high-priority sites.
  - Enough to drive **E_mit / E_prog > 1.0**—net-negative within the program boundary, even at low intensity.
- **Core**
  - Broader coverage across schools and libraries.
  - Stronger climate coverage ratios and more visible neighborhood-level impacts.
- **Extended**
  - Large-scale adoption across most participating sites.
  - Coverage ratios around **1.5–1.6**, meaning the program's climate spine is doing **half again** as much mitigation as the program's own emissions.

In all three, climate is not somebody else's problem to fix later. It is baked into the architecture.

4.5 Libraries & Community Layer

Public libraries and community organizations are treated as **infrastructure partners**, not afterthoughts.

4.5.1 Roles

The Libraries & Community Layer includes:

- **Shared access and learning points**
  - Devices, connectivity, and AI tools available at libraries and community centers.
  - Staff capacity to support students, families, and educators.
- **AI literacy and digital skills programming**
  - Workshops that complement school-based AI literacy.
  - Programs that meet families where they are—culturally, linguistically, and in terms of time and transportation.
- **Governance and challenge roles**
  - Seats on local and regional governance bodies.
  - Participation in challenge processes and risk monitoring.
  - Roles in communicating decisions and bringing feedback back in.
- **Climate spine participation**
  - Solar and efficiency projects at library and community sites.
  - Local climate projects rooted in community spaces.

This is where a lot of the **trusted face-to-face work** happens, especially with families who have every reason to distrust school systems and tech vendors.

4.5.2 Scenario differences

- **Lean**

    - Seed funding for priority libraries and partners, especially where school-based access is weakest.
    - Limited but meaningful AI literacy offerings and governance roles.
- **Core**
    - Wider library and partner coverage.
    - Regular AI literacy and digital access programs.
    - Stronger roles in governance and climate projects.
- **Extended**
    - Many libraries and community organizations acting as full hubs.
    - Rich programming.
    - Co-governance roles and multiple climate projects per community.

The design recognizes that AI and digital infrastructure **extend beyond school walls**, and that trust often lives in community spaces, not central offices.

4.6 Scenarios in architectural terms

Chapter 5 talks about Lean, Core, and Extended in **dollars and emissions**. Here we stay at the **architecture level**: what changes on the ground.

Across all scenarios:

- The four layers stay the same.
- Teacher Time and the Climate Spine remain **priority commitments**, not the first things to cut.
- What moves is **intensity** (how strong supports are) and **coverage** (how many people and sites get them).

4.6.1 Lean

Designed for **financially constrained or early implementation** contexts:

- Make sure the **Teacher Time Layer is real, not nominal**.
- Establish at least **one Connected Student Cohort** each year.
- Achieve **net-negative climate design** using targeted climate investments.
- Seed library and community roles in places that need them most.

Lean is the “no excuses” baseline: even in challenging times, you **do at least this much**.

4.6.2 Core

The **default target** when conditions are normal:

- More intensity and coverage across all layers than Lean.

- Stronger supports for teachers and cohorts.
- More extensive climate spine coverage.
- Wider library and community involvement.
- A comfortable **financial and climate buffer** for shocks.

4.6.3 Extended

An **upper-bound scenario** for favorable conditions:

- High intensity supports and deep coverage.
- Strong climate coverage ratios and widespread library/community integration.
- A smaller but real financial buffer, which makes it more sensitive to returns and cost overruns.

Switching scenarios—say, from Core to Lean during a downturn—is not meant to be a quiet budget trick. It is a **governance decision that must be justified and is open to challenge**, not something done in a back room.

4.7 Data and AI governance at the architecture level

Chapter 6 goes deep on governance details. Here, the focus is on how data and AI governance is **baked into the architecture** itself.

4.7.1 Data boundaries and flows

The Blueprint organizes data flows around a small number of domains:

- Teacher co-pilot and workflow data.
- Student learning and AI interaction data.
- Device and network telemetry.
- Climate and energy data.
- Governance and challenge data.

For each domain, the architecture defines:

- Who collects and stores the data.
- What level of aggregation is used for what purpose.
- Where data **may and may not flow** (for example, no covert flow of co-pilot logs into evaluation systems).
- How data can be exported or deleted.

These show up in **Data Purpose Schedules**, vendor contracts, and technical designs—access controls, logging, and minimization practices—not just in policy PDFs.

4.7.2 Tool onboarding and curation

The architecture includes a **tool onboarding pipeline**:

- Tools are screened for:
  - Alignment with Teacher Time and equity goals.
  - Energy and emissions implications.
  - Data and AI governance fit.
  - Accessibility and inclusion.
- Approved tools:
  - Go into a "Blueprint-compatible" catalog.
  - Are monitored via audits and KPIs.
  - Can be challenged and removed if they violate rules or cause harm.

This keeps the ecosystem **bounded and governable**, not a random pile of apps.

4.7.3 Logging, audits, and incident response

The architecture builds in:

- Logging suited to each data domain, with clear retention policies.
- Audit hooks so independent reviewers can check compliance with contracts and standards.
- Incident response paths that connect frontline observations (from teachers, students, families, librarians) to local, regional, and national bodies.

These mechanisms power the **challenge processes and risk registers** covered in Chapter 6.

4.8 How the layers interact

On paper, layers are clean. In real life, they blur. That is the point.

4.8.1 A day in the Blueprint (compressed example)

Picture a middle-school science teacher planning a unit on climate and local communities:

- Through the **Teacher Time Layer**, they use a co-pilot to draft lesson plans and differentiated materials, with a steward helping them map out a new workflow.
- Their class is part of the **Connected Student Cohort**. Students use their devices and connectivity supports to explore AI tools that simulate local energy and climate scenarios. AI literacy content helps them ask "How is this model trained? For whom is it good? Who is it bad for?"

- The school has **solar on the roof and better insulation** thanks to the Climate Spine. Students see real-time energy generation and savings on a dashboard and tie that into math and science work.
- The local **library hosts an evening session** for families on AI literacy and climate, shares information about the Blueprint, device care, and how to raise questions or concerns.

Data from all this flows in **constrained ways**:

- Aggregated usage and energy data feed KPIs and climate coverage metrics.
- Individual AI interactions are governed by strict data rules.
- Any incidents show up in **risk registers and challenge processes**, not just in private complaints.

The power here is not any single element. It is how the layers and governance structures **reinforce each other**.

4.9 Edge cases, opt-outs, and separate designs

No national architecture fits every context. Instead of pretending otherwise, the Blueprint **names edge cases and opt-outs up front**.

4.9.1 Indigenous nations and sovereign communities

Indigenous nations and other sovereign communities may:

- Want separate or adapted designs for AI, data governance, and climate projects.
- Need stronger or different governance structures.
- Choose different approaches to devices, content, and measurement.

The Blueprint assumes:

- Participation is **opt-in**, not default, for such communities.
- They have real power to negotiate bespoke arrangements or decline entirely.

4.9.2 Disability, health, and access

Students and staff with disabilities or health conditions may require:

- Alternative interfaces or devices.
- Different data handling practices.
- Modified participation in AI literacy or climate-related activities.

Accessibility is a **core design requirement**. Funding, governance, and challenge mechanisms must be able to adapt, not treat access as a bolt-on accommodation.

4.9.3 Carceral and highly constrained settings

Carceral facilities and other highly constrained environments raise tough questions about:

- Surveillance, consent, and coercion.
- Use of AI systems where autonomy is limited.
- Long-term consequences of data collection for people in these systems.

Here the Blueprint leans toward **separate or restricted designs**, with strong opt-out pathways. In some cases, the ethical answer may simply be **not to deploy** certain tools or layers.

4.9.4 Resource-constrained micro-systems

Exceedingly small or resource-constrained systems (remote rural districts, micro-states) may:

- Need to pool resources across jurisdictions.
- Require lighter governance structures.
- Implement smaller-scale or slower versions of the layers.

The architecture is meant to scale **down as well as up**, but **not at the expense of core protections**.

Across all these cases, the rule is: edge cases should trigger **explicit design work**, not quiet exceptions.

4.10 Chapter summary and bridge to Chapter 5

This chapter has described the **Fund Our Schools Blueprint architecture**:

- Four layers—Teacher Time; Connected Student Cohort & AI Literacy; Solar Schools & Climate Spine; Libraries & Community—designed to put **teacher time, equity, climate, and jobs** at the center.
- Lean, Core, and Extended scenarios that change **intensity and coverage** while keeping the architecture and constraints constant.
- Data and AI governance embedded in the architecture via data boundaries, tool onboarding, logging, audits, and incident response.
- Interactions across layers that tie everyday teaching and learning to infrastructure, governance, and local economies.
- An explicit approach to edge cases, opt-outs, and separate designs so sovereignty, disability, and constraint are taken seriously, not brushed aside.

With the architecture now on the table, **Chapter 5** turns to the next hard question:

Under conservative assumptions, can a $150B Fund Our Schools Permanent Fund with a 4% payout rule actually pay for this while creating jobs and staying net-negative on climate?

That is where the cost and climate models come in—and where we show that the math for this is not magic, it is choice.

Chapter 5 – Economics, Jobs, and Climate

5.1 What this chapter does

So far, the Blueprint has been mostly about structure and values:

- A **Fund Our Schools Permanent Fund** to anchor everything.
- A **four–layer architecture** built around teacher time, youth opportunity, climate, and community.
- Governance and labor design so those commitments stick.

This chapter asks the obvious follow-up:

Does the math work if we take the numbers seriously?

It does four things:

1. Sets out the **fund and payout logic**: why a $150B permanent fund with a 4% payout rule is the planning base for this design.
2. Spells out **Lean, Core, and Extended** cost bands and shows how they fit inside an expected ≈$6B annual payout.
3. Shows how that same spending level supports 60,000**–100,000 job-years every year**, mostly in work that directly benefits kids and communities.
4. Walks through the **climate spine** and coverage ratios, and why this design is on a path to net-negative emissions within its own program boundary.

None of this is meant to impress anyone with clever modeling tricks. The point is the opposite: to show that you can do this with **conservative assumptions and visible math**—and that opposing it means walking away from something that is not only good for schools, but also straightforward on the numbers.

5.2 The Fund Our Schools Permanent Fund: basic logic

The starting move is to get out of one-off grant logic and into **infrastructure logic**. That is what the Fund Our Schools Permanent Fund is for.

In this Blueprint, the fund has three key properties:

- A **target corpus** of **$150 billion**.
- A conservative **4% payout rule**—a standard endowment pattern that says: we aim to spend ≈4% of the fund's value each year, on average.

- A legal **mission lock**: the fund exists to support the four-layer Fund Our Schools architecture and its governance, labor, and climate spine, not whatever sounds good in the news next year.

If you take 4% of $150B, you get:

$$
0.04 \times \$150\text{B} = \$6\text{B per year (expected average payout)}.
$$

That **≈$6B** is the planning ceiling for everything else in this chapter. It has not guaranteed every single year—that's not how markets or funds work—but as a long-run planning assumption, it is conservative.

Everything that follows is built to live inside that **≈$6B per year** envelope.

5.2.2 Planning counts

For a U.S.-like system, the model uses rounded national anchors that sit close to current NCES counts:

• **Teachers (T): ≈3.8 million** public K–12 teacher-equivalent positions;
• **Students per Connected Cohort (S_c): ≈3.8 million**;
• **Public K–12 schools (N_s): ≈100,000**;
• **Libraries and community partners in the program (N_l): ≈40,000**.

These are planning values: approximate, slightly padded, and rounded. They sit on the high side of recent NCES counts and are meant as transparent, conservative anchors, not precise forecasts. Jurisdictions adapting the Blueprint would substitute their own counts.

5.3 Scenario costs: Lean, Core, and Extended

The Blueprint uses three integrated scenarios. All three include all four layers. What changes is **intensity and coverage**, not what we care about.

The planning counts are rounded and transparent:

- ≈**3.5 million teachers** in public K–12.
- ≈**4.0 million students** per Connected Student Cohort each year.
- ≈**100,000 schools**.
- ≈**40,000 libraries and other community partners**.

Unit costs are also kept simple and conservative:

- Devices and connectivity supports per student and teacher.
- Per-teacher costs for curated AI co-pilots, paid learning time, and AI & Workload Steward capacity.
- Per-site costs for solar and efficiency investments, with staggered rollout.
- Per-site costs for library and community infrastructure and programming.
- Fully costed governance, evaluation, and risk structures.

Those elements roll up into three annual program bands:

- **Lean scenario: ≈$3.0–3.1B per year**
  - Teacher Time Layer at solid but not maximal intensity.
  - One Connected Student Cohort per year, with careful targeting.
  - Climate spine focused on the most impactful, ready-to-go projects.
  - Libraries & Community layer at a "floor" level—real but modest.
- **Core scenario: ≈$4.0–4.1B per year**
  - Stronger Teacher Time coverage and staffing.
  - Connected Cohorts extended and stacked more quickly.
  - Climate spine scaled up to a more ambitious share of schools and libraries each year.
  - Libraries & Community given more staff time and programming.
- **Extended scenario: ≈$5.15–5.2B per year**
  - High-intensity Teacher Time supports and steward coverage.
  - Faster cohort expansion and deeper AI literacy programs.
  - Climate spine pushed closer to universal coverage over the planning period.
  - Libraries & Community fully integrated as hubs and governance sites.

All three scenarios sit **below** the expected ≈$6B payout:

- Lean leaves exceptionally large headroom—roughly half the expected payout—for shocks, research, and targeted expansions.
- Core uses more of the available space but still leaves a comfortable buffer.
- Extended pushes toward the upper bound but remains under it, and is treated as a **ceiling, not the default starting point**.

This is deliberate. The goal is not to design a program that balances only under optimistic assumptions. The goal is to show that even with cautious planning numbers and fully costed governance and climate work, the four-layer architecture can fit inside an expected Fund Our Schools payout.

If someone wants to claim, "we can't afford this," they need to show which part of that math is wrong, or which layers and protections they are willing to cut—and what that does to schools, jobs, and the climate.

5.4 Jobs and economic impact: what this pays for

It is easy to talk about billions of dollars and forget that those dollars pay human beings to do work. This section keeps that front and center.

From a jobs point of view, the Blueprint sends ≈**$3.0–5.2B** per year into some of the **most labor-intensive sectors in the economy**:

- Education and related support roles.
- Library and community services.
- Construction, retrofits, and clean energy work around schools and libraries.
- Governance, stewardship, and evaluation.

Standard employment multipliers for the U.S. economy (which look at how many jobs are supported per $1M of spending in each sector) tell a simple story:

- **Education** supports two **dozen jobs per $1M** in final demand when you count direct, supplier, and induced jobs.
- **Construction and retrofits** support on the order of **a dozen and a half jobs per $1M**.

You do not need the exact decimal points to see what this means:

- For every **$1 billion** spent in these labor-intensive sectors, you are easily in the range of **tens of thousands of job-years**.
- At **≈$3.0–5.2B per year**, the Blueprint supports on the order of **60,000–100,000 full-time equivalent job-years every year**.

Those job-years are not abstract. They show up as:

- **Teacher-facing roles**
  - AI & Workload Stewards embedded in schools and districts.
  - Paid learning time for teachers to experiment and upskill—payroll, not "volunteering after hours."
  - Stable positions for supporting staff and paraprofessionals needed to make the Teacher Time and Connected Cohort layers real.
- **Climate and facilities roles**
  - Electricians, roofers, HVAC techs, energy auditors, project managers, and maintenance workers attached to Solar Schools & Climate Spine projects across tens of thousands of sites.
  - Local jobs created in the communities where students live and go to school, not just in remote data centers.
- **Library and community roles**
  - Additional staff time for AI literacy workshops, youth and family programming, and governance work in libraries and community organizations.
  - Coordinators who connect school-day work with after-school and community programming.

- **Governance, evaluation, and risk roles**
    - Staff to run Fund governance, national and regional councils, local committees, data and AI governance processes, evaluation studies, and risk monitoring.

In other words: the Blueprint does not imagine AI as a way to **cut jobs**. It treats AI and digital infrastructure as a way to **create and stabilize public work** that directly supports educators, students, families, and communities, while upgrading climate infrastructure.

In a labor market where job growth is slowing and where Black workers and young people often absorb the hits first, a permanent, mission-locked program that supports **60–100 thousand job-years a year** in education, climate, and community work is not just education policy. It is employment and regional development policy.

5.5 Climate spine: why net-negative is on the table

AI and digital infrastructure are not magically “clean.” They come with:

- Devices and spare devices.
- Networks and data traffic.
- Servers, data centers, and cooling.
- Energy use that depends on the wider grid.

Rather than hand-waving this away, the Blueprint treats climate as a **hard design constraint**. The Solar Schools & Climate Spine exists for that reason.

At a simple level, the climate accounting in this chapter splits the world into two buckets:

- **Program emissions (E_{prog}) –** the annual emissions associated with the devices, connectivity, data centers, and AI workloads attributable to the Blueprint.
- **Mitigation and avoided emissions (E_{mit}) –** the annual emissions reduced or avoided by Solar Schools, efficiency upgrades, and associated local climate projects, plus a small, clearly bounded removals margin.

The basic idea is:

$$E_\text{net} = E_\text{prog} - E_\text{mit}$$

- If **$E_{net} > 0$**, the program is a net emitter.
- If **$E_{net} = 0$**, the program is net-zero in its own boundary.
- If **$E_{net} < 0$**, the program is net-negative in that boundary.

The Blueprint sets itself a simple requirement:

Over time, **E_mit should exceed E_prog**, and not just by a hair.

Under conservative assumptions about:

- Device counts and replacement cycles.
- Per-device and per-workload energy use.
- School and library solar and efficiency yields.
- A cautious margin for additional local climate projects and limited removals.

…the scenarios are sized so that:

- Lean is already **>1.0** on E_mit / E_prog once the climate spine is reasonably built out.
- Core pushes that ratio higher.
- Extended moves coverage into the **≈1.5–1.6** range under its assumptions.

This is not claiming to model the entire grid or economy. The boundary is the program itself: **"If we count the emissions we're adding and the reductions we're paying for, are we net-negative?"**

The point is to show that if you take climate seriously as a design constraint when you build AI and digital infrastructure for schools, you do not have to live with the default "AI makes emissions worse" story. You can design a program where the **same funding that buys devices, stewardship, and AI literacy also pays for enough Solar Schools and climate work to make the whole package net-negative** within its own scope.

If someone wants to argue we should ignore that option and keep building AI infra without a climate spine, that is a choice, not a law of nature.

5.6 Stress tests and conservative assumptions

All the numbers in this chapter are meant as **planning-level** guides, not point predictions. To avoid wishful thinking, the Blueprint bakes in a few kinds of caution.

5.6.1 Conservative planning counts and costs

The planning counts for teachers, students, schools, and partners are intentionally rounded and slightly padded to avoid under-counting. Unit costs are chosen toward the higher end of reasonable ranges, especially for:

- Devices and connectivity.
- Paid time and steward roles.
- Solar and efficiency projects.
- Governance and risk work.

If actual costs come in lower, that is upside. If they come in higher, the buffers between scenario costs and the ≈$6B payout leave room for adjustment.

5.6.2 "What if" cases

The modeling looks at what happens under a set of simple, named stress tests. For example:

- **Lean Returns** – the fund's effective long-run payout must drop below 4% for a sustained period.
- **Cost Overruns** – unit costs run higher than planned.
- **Hot Chips** – AI workloads turn out to be significantly more energy-intensive than assumed.
- **Slow Solar** – climate projects take longer to build out or underperform.
- **Slower Decarbonization** – the wider grid's emissions improve more slowly than hoped.

In each case, the levers are clear:

- Scale scenarios down (for example, hold at Lean or Core rather than Extended).
- Rebalance within layers (for example, focusing climate funds on highest impact sites first).
- Adjust the share of available payout directed to climate spine vs. other layers temporarily.

Because Lean and Core sit well under ≈$6B and Extended is defined as a ceiling, the architecture leaves room to absorb shocks **without collapsing the whole design**.

5.6.3 What the math is and is not doing

The math in this chapter does **not** pretend to forecast exact costs, returns, or emissions. It is doing three more modest things:

1. Showing that there is **no obvious fiscal barrier** to the architecture at the scale of a national education system, under conservative planning assumptions.
2. Showing that a climate-responsible, net-negative design is **possible** within the same envelope if we treat climate as a constraint from the start.
3. Making the assumptions visible enough that other people can **plug in their own numbers** and see what changes.

If someone can improve the numbers—or show that certain assumptions should be stricter, that is a good thing. The Blueprint's job is to get us out of the fog of "we have no idea what this would cost" and into a world where we can argue over actual scenarios.

5.7 What this chapter proves—and what it leaves open

Taken together, this chapter does not prove that the Fund Our Schools Blueprint is **inevitable**. It does show that it is:

- **Fiscally plausible** at national scale, under a conservative permanent-fund model and rounded planning counts.

- Job-creating, with on the order of 60,000–100,000 gross job-years every year concentrated in teaching, paraprofessional work, libraries and community organizations, and clean energy and efficiency work around schools. These are gross jobs supported by the Blueprint; the modeling does not attempt to net out any jobs that might be displaced elsewhere in the economy.
- **Climate-responsible**, with a program-level path to net-negative emissions within a clear boundary, not just "less bad than nothing."

Economically, the design is not asking for something wild. It is taking a small fraction of national wealth, locking it up for a clearly defined purpose, and using the returns to:

- Stabilize teacher time and working conditions.
- Close real gaps in student access and AI literacy.
- Modernize school, library, and community infrastructure for a warming world.
- Support steady, local jobs wrapped around those institutions.

What this chapter leaves open, on purpose, are questions like:

- What is the exact best mix of tools and roles inside the Teacher Time Layer?
- How fast should Connected Cohorts expand in each jurisdiction, beyond the national template?
- Which climate projects deliver the best mix of emissions reductions, resilience, and visible local benefit?
- How should different communities tune the balance between Lean, Core, and Extended considering their specific fiscal and climate realities?

Those are questions for implementation and research, not reasons to walk away from the design.

The main point is simple: **nothing in the math says this is impossible**. If we choose not to do something like this, it will not be because we cannot afford it or because we cannot make the climate numbers work. It will be because we did not prioritize teacher time, youth opportunity, climate responsibility, and public jobs at the level this chapter treats them.

Chapter 6 made the case that governance, labor, and risk can be designed to keep those priorities visible. Chapter 7 asks what it means, politically and morally, to say yes—or no—to a program that looks like this.

Chapter 6 – Governance, Labor, Data & AI, and Risk

6.1 What this chapter does

Up to now, the Blueprint has mostly been about **what** we build and **how we pay for it**:

- A **Fund Our Schools Permanent Fund** with an expected ≈**$6B** annual payout.
- A **four–layer architecture** for AI and digital infrastructure: Teacher Time; Connected Student Cohort & AI Literacy; Solar Schools & Climate Spine; Libraries & Community.
- Cost, jobs, and climate modeling that shows the architecture is fiscally plausible, job-creating, and net-negative on carbon within a defined program boundary under conservative assumptions.

This chapter answers a different question:

Who makes decisions about all this, with what power, using what rules, and what happens when things go wrong?

In other words: if we treat teacher time, equity, climate, and jobs as **hard constraints**, what kind of **governance, labor, data & AI, and risk** structures do we need to make that real?

This chapter:

1. Lays out the **governance architecture** from the Fund Board down to local committees.
2. Describes the **labor and teacher power protections** that sit alongside that architecture.
3. Specifies **data and AI governance** tools that keep the system from drifting into surveillance or vendor capture.
4. Explains how **KPIs, failure conditions, and challenge mechanisms** give people real leverage, not just advisory roles.
5. Shows how **risk management and learning cycles** turn this from a static plan into something that can adapt without losing its values.

If Chapters 4 and 5 are about the **hardware and the math**, this chapter is about the **rules and the people** who hold them.

6.2 Design principles for governance and labor

The governance and labor design here is built around a few plain principles:

1. **Public infrastructure needs public governance.**
   AI and digital infrastructure for education should be governed like other critical public infrastructure, not like a collection of private apps. That means clear public mandates, real representation, and accountability that runs both up and down.

2. **People closest to the work should have real power, not just input.**
   Teachers, paraprofessionals, librarians, support staff, students, families, and community organizers live with the consequences of AI and digital decisions. They should be **inside the decision-making structure**, not just surveyed after the fact.
3. **Labor protections and governance are part of the architecture, not add-ons.**
   Non-coercion rules, anti-surveillance clauses, and AI & Workload Steward roles are as much "infrastructure" as devices and solar panels. If we cut them when the budget gets tight, we have changed the design.
4. **Data and AI governance should be boring, strict, and predictable.**
   We want fewer surprises, fewer "we didn't realize it did that," and more "this is the contract, this is the purpose, this is how we audit and shut it down if needed."
5. **Risk should be tracked and actively managed, not discovered by scandal.**
   Problems with AI, data, workloads, equity, or climate performance should show up in **KPIs, risk registers, and challenge mechanisms** long before they show up on the front page or in a lawsuit.

Everything in this chapter is meant to translate those principles into actual structures and processes people can point to.

6.3 Governance architecture: from Fund Board to local committees

The governance model runs on four main tiers:

1. The **Fund Our Schools Permanent Fund Board**.
2. A **National Fund Our Schools Council**.
3. **State or Regional Councils**.
4. **Local Fund Our Schools Committees**.

Each level has a clear job and a clear connection to the others.

6.3.1 Fund Our Schools Permanent Fund Board

At the top is the **Fund Board**. Its job is to:

- Protect the **corpus** (≈$150B) over the long run.
- Generate an expected ≈**$6B per year** in spending power under a 4% payout rule.
- Make sure investment decisions line up with the **education and climate mission** of the fund.

The Board is not just a group of finance people. It is a **51–seat body** with reserved seats for:

- Investment and public finance experts.
- National and state education officials.
- Teachers and unions.

- Paraprofessional and support staff representatives.
- Students and youth organizations.
- Families and community organizations.
- Libraries and cultural institutions.
- Climate and environmental justice advocates.
- Data and AI governance experts.
- Representatives from historically marginalized communities (for example, Indigenous nations, Black and Brown communities, disability communities).

The Board's **fiduciary duty** is defined in statute in a way that is broader than "maximize financial return at all costs." It includes:

- Protecting the **real value** of the corpus over time.
- Funding the four-layer Blueprint and its governance, labor, data, and climate spine.
- Honoring **intergenerational equity—**today's students and future students should both benefit.

The Board does not micromanage schools. It sets the **big financial and mission framework** that the rest of the system runs on.

6.3.2 National Fund Our Schools Council

The **National Fund Our Schools Council** sits under the Fund Board. Think of it as the policy and coordination brain for the program.

Its main responsibilities are to:

- Turn the fund's mission into **concrete standards** for the four layers.
- Approve and periodically update the **Teacher Time, Connected Cohort, Climate Spine, and Libraries & Community standards**.
- Set and revise **national KPIs, coverage ratios, and failure conditions**.
- Oversee cross-state **data and AI governance frameworks**.
- Coordinate large-scale evaluations and research with independent partners.

Representation on the National Council overlaps with the Fund Board but leans more toward **practitioners and implementers**:

- Teachers and unions, librarians, community organizers.
- State and district leaders.
- Youth and family representatives.
- Technical and climate experts.

In practice, the Council decides what counts as a compliant program under the Blueprint:

- What teacher time protections must be in place.
- What counts as a Connected Student Cohort.

- What standards Solar Schools and climate projects must meet.
- What libraries and community hubs should be able to provide.

It also reads the KPIs and risk reports and pushes changes down to the next layers.

6.3.3 State or Regional Councils

At the next level, **State or Regional Fund Our Schools Councils** make the national design real in specific contexts.

Their responsibilities include:

- Adapting national standards to **local legal, labor, and climate conditions**.
- Choosing implementation pathways for the four layers.
- Coordinating with existing state structures (state boards of education, PUCs, climate, and energy agencies, etc.).
- Providing technical assistance to districts, libraries, and community partners.
- Aggregating and reporting up on KPIs, risks, and incident data.

Representation is again mixed:

- State education agencies and district leaders.
- State-level unions and professional associations.
- State library associations and community groups.
- Regional climate and energy agencies.

These councils know the local realities—funding formulas, labor law, building stock, grid conditions—and adjust the Blueprint accordingly **without dropping the core constraints**.

6.3.4 Local Fund Our Schools Committees

At the ground level, **Local Fund Our Schools Committees** operate at the district or multi-district level (depending on context). They are where the system touches real schools and libraries.

Each Local Committee includes:

- Classroom teachers and paraprofessionals from different school types and communities.
- School and district administrators.
- Students and youth representatives.
- Families and caregivers.
- Librarians and community organizations.
- Representatives from local unions and community groups.

Local Committees have four main jobs:

1. **Co-design tool mixes**
    - Decide, within standards and budget, which AI tools, platforms, and supports are used in local schools and libraries.
    - Ensure that Teacher Time Layer protections, Connected Cohort guarantees, climate spine projects, and Libraries & Community supports are implemented, not just promised.
2. **Monitor KPIs and failure conditions**
    - Review local data on teacher workload, equity, climate coverage, participation in AI literacy, and incidents.
    - Flag when trends move in the wrong direction.
3. **Run challenge and correction processes**
    - Receive and process complaints and challenges from teachers, staff, students, families, and community partners.
    - Trigger formal responses when failure conditions are met.
4. **Feed upward**
    - Report on successes, problems, and risks to state/regional councils.
    - Provide ground-level insights that national-level bodies cannot see from afar.

In practice, a Local Committee is the place where someone can say, “This tool is making my job harder and my students’ lives worse,” and there is a **structured, resourced way to respond**.

6.4 Labor protections and teacher power

None of the governance structure matters if teachers and other workers cannot safely say “no” when something crosses a line. That is where **labor protections and teacher power** come in.

The Blueprint assumes that labor protections are **part of the architecture**, not a later negotiation if there’s time.

6.4.1 Non-coercion and anti-surveillance

A core set of policies and contract clauses define what AI and digital tools **cannot** be used for:

- No coercion:
    - Teachers and staff cannot be forced to use AI tools as a condition of employment if those tools violate agreed standards or make their work unsafe or unsustainable.
    - Refusal, when grounded in documented risks or failure conditions, is protected.
- No workplace surveillance missions:
    - AI tools cannot be used to generate covert productivity metrics on individuals (for example, keystroke monitoring, screen scraping, “time on app” for staff) for evaluation or discipline.
    - Aggregated usage data can be used for support and improvement, not punishment.
- No student surveillance missions:

- AI and analytics cannot be used to build individual behavioral risk scores, predictive discipline lists, or similar carceral tools.
- Tools that monitor student behavior or emotions at a granular level are out of bounds.

These are not just preferences. They are **enforceable rules** that show up in contracts, policies, and the KPIs and risk registers described later.

6.4.2 AI & Workload Stewards

The Blueprint centers a specific labor role: the **AI & Workload Steward**.

Stewards are:

- Paid roles funded by the Blueprint.
- Selected and evaluated with strong input from teachers and unions.
- Accountable to teachers and Local Committees, not just central administration.

Their job is to:

- Map how time is being spent by teachers and key staff.
- Identify tasks that can be automated or restructured without harming educational quality or equity.
- Co-design and test new workflows with teachers, paraprofessionals, and leaders.
- Monitor whether promised workload reductions show up.
- Help catch and document early signs of new burdens, inequities, or risks.

Stewards are not AI evangelists whose job is to increase "uptake." They are **advocates for humane workloads** whose job is to make sure AI and digital tools help rather than hurt. If a tool makes conditions worse, stewards should be among the first to say so—and labor protections should give them cover when they do.

6.4.3 Collective bargaining and agreements

The Blueprint assumes that unions and professional associations will negotiate over AI and digital tools. It provides:

- Model contract clauses on non-coercion, anti-surveillance, evaluation limits, and steward roles.
- Language for protecting paid learning time.
- Agreement templates for how KPIs, failure conditions, and challenge mechanisms interact with existing grievance and bargaining processes.

The idea is not to replace local bargaining, but to give unions and employers a **shared starting point** that already matches the architecture and constraints of the Blueprint.

6.5 Data and AI governance

If AI and digital tools are going to be run as public infrastructure, their data practices need to match that. The Blueprint builds in several layers of **data and AI governance**.

6.5.1 Data Purpose Schedules and minimization

For each system and AI tool, there is a **Data Purpose Schedule** that sets out:

- What data is collected.
- For what purpose.
- For how long.
- With what access rights.
- Under what legal and policy conditions it can be shared or reused.

Data minimization is the default:

- If the job can be done without personally identifiable data, it should be.
- If fine-grained data is collected now but never used for a meaningful purpose, it should be stopped.
- Sensitive categories (race, disability status, immigration- and citizenship-related information, etc.) are handled with extra care and clear justification.

The point is to avoid the "collect everything now, figure it out later" pattern that invites abuse.

6.5.2 Contracts and technical standards

Vendor contracts and technical standards are written to:

- Limit data use to the purposes in the Data Purpose Schedules.
- Prohibit selling or repurposing student and educator data for advertising or unrelated analytics.
- Require strong security and breach notification standards.
- Guarantee audit rights for independent evaluators and governance bodies.
- Require easy exit and data portability—no hidden lock-in.

On the technical side, the Blueprint favors:

- Open standards and APIs.
- Interoperable identity and access management systems.
- Modular components that can be swapped out without tearing the entire system apart.

This is how you keep the system from quietly turning into a de facto private platform.

6.5.3 AI use categories and red lines

Not all AI uses are treated the same. The Blueprint distinguishes between:

- **Low-risk, low-stakes uses –** for example, draft generation for lesson plans, translation of family communications, optional supports for organization. These are subject to basic privacy and security rules but not treated as structurally dangerous.
- **Medium-risk uses –** for example, formative feedback tools, content recommendation systems. These require stronger review, transparency, bias monitoring, and human-in-the-loop design.
- **High-risk uses –** for example, tools that could impact discipline, placement, evaluation, or access to services. These are either explicitly banned (risk scoring, biometric surveillance, "emotion AI") or require stringent approvals and safeguards that, in practice, are extremely hard to meet.

Red lines are clear:

- No AI-driven individual risk scores or predictive policing of students.
- No AI-driven performance scoring of teachers based on covert data collection.
- No unconsented biometric monitoring or emotion recognition as part of schooling.

These categories and red lines are not left to local improvisation. They are built into national standards, state/regional policies, local committee charters, and contracts.

6.6 KPIs, failure conditions, and challenge mechanisms

You cannot govern what you do not measure, and you cannot measure everything. The Blueprint tries to be **minimal but sharp** with KPIs and failure conditions.

6.6.1 KPIs

KPIs are defined for:

- **Teacher time and conditions –** average weekly hours, distribution of time across tasks, measures of burnout and autonomy, retention, and transfer patterns.
- **Equity and access –** device and connectivity access, participation in AI literacy, meaningful use patterns, disaggregated by race, class, disability, language, and geography.
- **Climate performance –** program-level E_{prog} and E_{mit}, coverage ratios, progress on Solar Schools and efficiency projects, resilience metrics.
- **Governance and participation –** representation on councils and committees, meeting frequency and quorum, use of challenge mechanisms, transparency of decisions.
- **Incidents and harms –** documented data and AI incidents, grievances, challenges upheld, corrective actions taken.

These indicators are not meant to live in a hidden dashboard. They are reported regularly at local, regional, and national levels, and are tied directly to **failure conditions**.

6.6.2 Failure conditions

A failure condition is a pattern that, once it shows up in the data, automatically triggers a deeper review and action plan. Examples (which can be tuned locally) include:

- **Teacher workload –** if average weekly hours for any major subgroup of teachers rise above baseline by more than a set threshold (for example, 3 hours) for two or more years in a row, especially in high-need schools.
- **Equity gaps –** if access or outcome gaps (devices, meaningful AI use, participation, completion) widen beyond agreed bounds for marginalized groups.
- **Climate coverage –** if E_mit / E_prog drops below 1.0 over a sustained period, or falls significantly short of the agreed trajectory toward coverage ratios in each scenario.
- **Governance participation** – if required seats remain unfilled or committees do not meet basic transparency standards.
- **Incidents –** if there is a cluster of serious data and AI incidents or harms that share similar root causes.

Failure conditions are not about punishment. They are about **forcing attention and response**.

6.6.3 Challenge mechanisms

Challenge mechanisms give teachers, staff, students, families, librarians, community organizations, and unions a practical way to say, “This is not working,” and be heard.

At the local level:

- Individuals or groups can file challenges that connect to specific KPIs or failure conditions.
- Local Committees must log, consider, and respond within defined timelines.
- Where challenges are upheld, there is a requirement to propose and implement changes (for example, changing a tool, scaling intensity, adjusting supports).

At the regional and national levels:

- Patterns in local challenges and outcomes are tracked.
- The National Council can require reviews, audits, or redesigns for tools or practices that repeatedly show up in challenges.
- In extreme cases, the Fund Board can condition payouts on meeting certain corrective milestones.

The existence of challenge mechanisms signals that **complaining is not a side activity**. It is part of how the system corrects course.

6.7 Risk management and learning cycles

With infrastructure on this scale, risk is not an edge case. It is daily business.

The Blueprint treats risk management as:

- **Multi-level –** risks are tracked at fund, national, regional, and local levels.
- **Public –** risk registers and mitigation plans are not secret.
- **Tied to learning –** every incident is a chance to improve the design, not just to assign blame.

6.7.1 Risk registers

Each governance level maintains a **risk register** with:

- Risk description (for example, “Teacher workloads rising in high-need schools,” “Vendor lock-in risk for core services,” “Climate coverage lagging in certain regions”).
- Likelihood and impact assessments.
- Current controls and mitigation plans.
- Owners and review dates.

Risk registers are reviewed regularly, and summaries are published. The idea is to make **systemic risks visible** before they blow up.

6.7.2 Incident response and learning

When something goes wrong—data breach, harmful AI output, major workload spike, climate project failure—the system:

1. Logs the incident (with privacy protections).
2. Notifies affected parties.
3. Investigates root causes.
4. Decides whether the incident signals a broader design problem.
5. Adjusts tools, standards, or practices accordingly.

Lessons learned are shared up and down the governance chain. This is how a national Blueprint learns from local mistakes without throwing local actors under the bus.

6.7.3 Adaptive management

Every few years, the Fund Board and National Council lead a more formal **adaptive management cycle**:

- Review long-run performance on costs, jobs, teacher time, equity, climate, and governance.
- Revisit parameters, standards, and scenario definitions (Lean, Core, Extended) based on new evidence and conditions.
- Commission independent evaluations to inform these choices.

The goal is to keep the **values and constraints** stable while adjusting the **details** as we learn more. The Blueprint is not static. It is a living system with guardrails.

6.8 What this chapter shows

This chapter has been about the **rules, roles, and recourse** behind the Fund Our Schools Blueprint. It has tried to show that:

- You can design governance for AI and digital infrastructure in education that is **public, transparent, and participatory**, not just vendor-by-vendor.
- You can treat **labor protections, steward roles, and non-coercion and anti-surveillance rules** as infrastructure, not as afterthoughts.
- You can specify **data and AI governance** in enough detail to avoid the default slide into surveillance capitalism or state overreach.
- You can define **KPIs, failure conditions, and challenge mechanisms** that give people on the ground real leverage when things go wrong.
- You can run **risk management and learning cycles** so the Blueprint can adapt without losing its commitments to teacher time, equity, climate, and jobs.

If Chapters 4 and 5 answer "What do we build and how do we pay for it?", this chapter answers, "How do we protect it from being twisted into something else?"

Taken together, they set the stage for Chapter 7, which asks the final questions: **What does it mean to say yes to a design like this? What does it mean to say no? And what excuses are we willing to accept when it comes to improving schools, protecting teachers, supporting communities, and facing the climate crisis head-on?**

Chapter 7 – The Fund Our Schools Challenge and Conclusion

7.1 Overview

By this point, the Blueprint has done a lot of work.

- Chapter 1 set out the problem and the basic idea: if AI and digital systems are going to be wired into public K–12 education anyway, we might as well design them so they protect teacher time, expand opportunity for young people, run net-negative on carbon within a defined program boundary, and create good jobs.
- Chapters 2 and 3 showed how the existing research and the design-based systems method support that move.
- Chapter 4 laid out the four-layer architecture—**Teacher Time; Connected Student Cohort & AI Literacy; Solar Schools & Climate Spine; Libraries & Community—** and showed how they fit together.
- Chapter 5 showed that under conservative assumptions, **Lean, Core, and Extended** scenarios fit inside an expected **≈$6B** annual payout from a **$150B** Fund Our Schools Permanent Fund while staying **net-negative on emissions** within a defined boundary.
- Chapter 6 described the governance, labor, data, and AI, KPI, failure, challenge, and risk structures that keep teacher time, equity, and climate from being quietly traded away once the press conference is over.

This closing chapter does five things:

1. **Answers the three research questions directly** (Section 7.2).
2. **Spells out the Fund Our Schools Challenge** to separate groups—teachers and unions, students and families, librarians and community organizations, policymakers, funders and investors, and researchers (Section 7.3).
3. **Restates what this Blueprint does and does not claim**, in short form (Section 7.4).
4. **Sketches an IES-compatible research agenda**, treating the Blueprint as a research artifact and challenge (Section 7.5).
5. **Looks at futures and excuses**, and ends with a clear conclusion (Section 7.6).

The goal here is not to introduce surprises. It is to pull the threads together and make it extremely hard to say, “We didn’t know what a better system could look like.”

7.2 Answering the Research Questions

7.2.1 RQ1 – Architecture

RQ1. What would it mean, in concrete terms, to design a national AI and digital infrastructure for public K–12 education that treats teacher time, equity, and climate responsibility as non-negotiable constraints?

In this Blueprint, RQ1 is answered by a specific **system design**, not just a list of principles.

At the core is a **Fund Our Schools Permanent Fund** that provides long-horizon, mission-locked resources. Around that, four layers work together:

- **Teacher Time Layer**
  Devices and a small, curated set of AI co-pilots for teachers; paid learning time; **AI & Workload Stewards**; non-coercion and anti-surveillance rules; and an explicit expectation that if you add a tool, you remove or shrink some low-value work. The point is to put **teacher time and professional judgement first**, and build everything else around that.
- **Connected Student Cohort & AI Literacy Layer**
  At least one **Connected Student Cohort** per year, with devices, connectivity support, and structured AI literacy experiences for students, teachers, and families. Cohorts "stack" over time. The logic is simple: we stop pretending that AI is optional for young people, and instead give them **guided, equitable access**.
- **Solar Schools & Climate Spine**
  School and library solar and efficiency projects, plus local climate initiatives, designed so that emissions **mitigated** (E_mit) cover or exceed program emissions (E_prog) in all scenarios, with coverage ratios >1.0 for Lean and Core and ≈1.5–1.6 for Extended. Climate is not a slogan here; it is a **design constraint and a balance sheet**.
- **Libraries & Community Layer**
  Libraries and community organizations as shared access points, AI literacy hubs, governance actors, and climate sites. This is where the system stays grounded in communities, not just dashboards.

Surrounding all of this is a **multi-level governance and labor architecture**:

- A Fund Board with mission lock and real representation for teachers, unions, students, families, libraries, communities, climate and AI experts, and equity advocates.
- National, regional, and local bodies that share decisions over tools, climate projects, and supports.
- Data and AI governance rules, KPIs and failure conditions, challenge mechanisms, and risk registers that align with the constraints.

Within this architecture, **teacher time, equity, and climate responsibility are treated as actual constraints**:

- If a tool or program would increase net workload, deepen inequities, or erode climate coverage beyond agreed thresholds, it **violates the design** and is supposed to be revised or refused.

- Governance and labor tools exist precisely to enforce that, not to comment politely from the sidelines.

That is what it means, in this design, to answer RQ1: not a slogan, but a concrete architecture that someone can either take up, tweak, or argue against.

7.2.2 RQ2 – Economics and Climate

RQ2. Under what planning-level conditions is such an infrastructure fiscally and climatically plausible if financed by a permanent fund?

The Blueprint does not say "this is always affordable." Instead, it spells out conditions under which it **is** plausible.

Fund conditions

- A **$150B** Fund Our Schools Permanent Fund with a **4% payout rule** and conservative long-run real-return assumptions.
- An expected ≈**$6B** annual payout, used as the planning ceiling for program costs.

Cost conditions

- Planning counts: approximately **3.8 million** teachers, **3.8 million** students per Connected Cohort, 100,000 schools, and 40,000 libraries and partners.
- Rounded, conservative unit costs for devices, co-pilots, paid learning time, stewards, climate investments, and library/community supports.
- Aggregation into three scenario bands:
  - **Lean:** ≈**$3.0–3.1B**
  - **Core:** ≈**$4.0–4.1B**
  - **Extended:** ≈**$5.15–5.2B**
- Buffers between each scenario's annual cost and the ≈$6B expected payout, especially in Lean and Core.

Climate conditions

- A defined program boundary covering emissions from devices, connectivity, and AI workloads attributable to the Blueprint.
- Conservative assumptions for device and AI energy use.
- Solar, efficiency, local climate projects, and a small removals margin sized to produce coverage ratios:
  - Lean: **>1.0**
  - Core: **>1.2–1.3**
  - Extended: **≈1.5–1.6**

Stress testing

- Stress scenarios such as "Lean Returns," "Cost Overruns," "Hot Chips" (higher AI energy), "Slow Solar," and "Slower Decarbonization" show how the system can stay inside fiscal and climate constraints by scaling down intensity (especially using Extended as a ceiling) and adjusting climate investments.

Under these conditions, the Blueprint is **fiscally and climatically plausible at a planning level**. If the conditions are not met—if returns are much lower, costs or emissions are much higher, or political actors refuse mission lock and constraints—then the architecture needs to be adjusted or replaced. The math is on the table. If someone wants a different math story, they must write it down.

7.2.3 RQ3 – Governance, Labor, Risk, and Research

RQ3. What governance, labor, data and AI, and risk tools would be required to make these commitments real and enforceable over time, and how can the Blueprint itself support empirical research and evaluation?

The Blueprint answers RQ3 by specifying what those tools look like at the design level.

Fund governance

- A **51-member Board** with a tightly specified mission: to finance the four-layer Blueprint and the governance, labor, data and AI, KPI, failure, challenge, and risk structures needed to uphold teacher time, equity, and climate commitments in public K–12 and libraries.
- Diverse representation: financial and investment expertise; national and state education authorities; teachers and unions; students and families; libraries and community organizations; climate and AI governance experts; and seats reserved for marginalized communities.
- Clear fiduciary duties tied to the mission: protect long-run real value; align payouts and investments with the mission; consider intergenerational equity.

Program governance

- A **National Fund Our Schools Council** to set standards, monitor KPIs and failure conditions, and coordinate across layers.
- **State or regional councils** to adapt standards and design implementation.
- **Local Fund Our Schools Committees** to co-design tool mixes, climate projects, and supports, and to serve as frontline challenge bodies.

Data and AI governance

- **Data Purpose Schedules**, clear data minimization, vendor contracts with strict purpose limitation and audit rights, and integrated audits and incident response.
- Restrictions on high-risk AI uses (risk scoring, biometric surveillance, punitive analytics) built into standards and contracts.

Labor and teacher power

- Non-coercion and anti-surveillance clauses in policy and contracts.
- Limits on AI-generated data in evaluation and discipline.
- AI & Workload Stewards independent of direct line management.
- Collective bargaining templates grounded in this architecture.

KPIs, failure conditions, challenge mechanisms, and risk registers

- KPIs for teacher time, equity, climate coverage, governance participation, and incidents.
- Pre-defined **failure conditions** (for example, worsening workload, deepening gaps, climate coverage dropping below agreed thresholds) that trigger structured reviews.
- Challenge tools that give unions, teachers, students, families, libraries, and community groups defined pathways to demand changes.
- Risk registers and adaptive management cycles at fund, national, regional, and local levels.

For research, the Blueprint:

- Makes the full system design explicit enough to support **testable hypotheses**.
- Surfaces key implementation and impact questions.
- Suggests multi-level evaluation strategies, discussed in detail in Section 7.5.

RQ3 is answered by showing that it is **possible** to design governance and labor structures that make the commitments monitorable and contestable, and that the same design can serve as a backbone for in-depth research.

7.3 The Fund Our Schools Challenge

The Fund Our Schools Blueprint is not just a proposal. It is a **challenge**. It invites diverse groups to look at a concrete design and then answer, honestly, whether they want this kind of future—or something else.

7.3.1 For teachers and unions

The challenge

Do you want AI and digital infrastructure that is organized around **teacher time, autonomy, and dignity**, or are you prepared to let those be whatever falls out of vendor roadmaps and ad hoc decisions?

The Blueprint offers:

- A Teacher Time Layer that returns time, protects autonomy, and embeds non-coercion and anti-surveillance rules;
- AI & Workload Stewards who are on the side of teachers, not quotas;
- Governance seats and challenge tools for teachers and unions.

If you want to start tomorrow, your first move could be:

Use the Blueprint to draft bargaining demands and local policy proposals:

- A non-coercion and anti-surveillance clause in policy and contracts;
- A pilot AI & Workload Steward role in a school or district;
- A local challenge mechanism tied into existing union structures.

Even without a **$150B** fund in place, **labor protections, steward roles, and non-coercion rules can start now**. The Blueprint just gives you a bigger frame and a language for where that work is heading.

7.3.2 For students and families

The challenge

Will AI and digital systems in schools **work with you**, or will they be something done **to you**?

The Blueprint offers:

- Connected Student Cohort guarantees—so at least one national cohort per year gets devices, connectivity support, and structured AI literacy;
- AI literacy experiences that include families, not just students sitting alone in front of a screen;
- Libraries and community hubs as shared spaces, not leftover spaces;
- Governance seats and challenge tools for student and family organizations.

If you want to start tomorrow, your first move could be:

Use the Blueprint to demand:

- A local **AI literacy plan** that includes families, not just staff development;
- Representation of student and family groups on digital and AI committees;

- Clear, accessible information about what AI tools are being used, what data they collect, and how to raise concerns.

You do not have to wait for the full Blueprint to exist to insist on **“no AI about us, without us”** at the local level.

7.3.3 For librarians and community organizations

The challenge

Are libraries and community organizations going to remain **service providers on call**, or will you insist on being **co-governors** of AI and digital infrastructure?

The Blueprint offers:

- A Libraries & Community Layer with funding for infrastructure, programming, and governance roles;
- Recognition of libraries and community sites as part of the **climate spine** and as AI literacy providers;
- Shared decision-making on tools, programs, and climate projects.

If you want to start tomorrow, your first move could be:

Use the Blueprint to:

- Propose a local AI and digital hub at your library or community center, with specific supports and hours;
- Seek formal roles on school or district digital and AI committees;
- Develop and pilot AI literacy workshops for families, students, and educators, explicitly framed as **Blueprint-aligned**.

These moves can plug into a larger architecture if a permanent fund is created. In the meantime, they push against the idea that AI in education is only about schools and vendors.

7.3.4 For policymakers and education leaders

The challenge

If you accept that AI and digital systems are coming to schools, **on what architecture, funding, and climate terms** will that happen?

The Blueprint offers:

- A concrete four-layer architecture and permanent-fund design;
- Planning-level cost and climate modeling;
- Governance, labor, and risk structures that can be adapted to different jurisdictions.

If you want to start tomorrow, your first move could be:

Use the Blueprint to:

- Conduct a **gap analysis** of your current digital and AI infrastructure against its four layers and constraints (teacher time, equity, climate, jobs);
- Pilot a subset of the Teacher Time Layer—devices, co-pilots, paid learning time, stewards—in one region, with labor protections baked in from day one;
- Commission modeling for a **smaller Fund Our Schools-style mechanism** at state or multi-district level, testing how a mission-locked fund would compare to current grant cycles and bond funding.

You do not have to adopt the full Blueprint to move toward teacher-first, climate-responsible AI infrastructure. But if you reject it, the challenge is to put **your** architecture and math on the table, not just say “no” to this one.

7.3.5 For funders and investors

The challenge

If you are going to fund AI and digital infrastructure in education, will that money go into **short-term pilots and vendor contracts**, or into **long-horizon, public, teacher-first, climate-responsible systems**?

The Blueprint offers:

- A design for a **$150B** permanent fund anchored in public education;
- Illustrative capitalization pathways (for example, windfalls, progressive taxation, and aligned private and philanthropic capital);
- A climate spine that gives AI investments a **net-negative emissions profile** within a program boundary.

If you want to start tomorrow, your first move could be:

Use the Blueprint to:

- Explore a smaller-scale version of a **mission-locked fund** (state, city, or multi-district), with clear teacher time, equity, and climate mandates;
- Align existing philanthropic or public investments with the four-layer architecture and climate spine, rather than scattering them across unrelated pilots;

- Require labor protections and data and AI governance standards as **conditions of funding**.

The challenge here is straightforward: move from one-off grants for devices and pilots to **enduring infrastructure with accountability**—or be honest that you are not interested in that kind of responsibility.

7.3.6 For researchers and evaluators

The challenge

Will research stay focused on individual tools and short-term interventions, or will it **engage with system architectures and long-horizon design**?

The Blueprint offers:

- A complex but explicit system design;
- Clear assumptions and parameters;
- Identified KPIs, failure conditions, and risk registers;
- A set of open questions across layers and levels.

If you want to start tomorrow, your first move could be:

Use the Blueprint as:

- A source of research questions—about teacher time, AI literacy, climate spine performance, governance, jobs, and equity;
- A template to propose evaluations of partial implementations (for example, Teacher Time pilots, Connected Cohorts, Solar Schools programs, or local governance innovations);
- A baseline for comparative work with alternative architectures and funding models.

Section 7.5 takes this further, sketching an IES-compatible agenda. The basic challenge is simple: treat system design as a **first-class research object**, not background noise.

7.4 What This Blueprint Does and Does Not Claim (Revisited)

Section 1.8 laid out the claims and non-claims in detail. This section restates them briefly from the vantage point of the full Blueprint.

7.4.1 What this Blueprint claims (in one paragraph)

This Blueprint claims that there exists at least one internally coherent, fiscally and climatically plausible way to organize national AI and digital infrastructure for public K–12 education and libraries around **teacher time, equity, climate responsibility, and job creation**: the four-layer, permanent-fund-backed Fund Our Schools Blueprint, implemented through Lean, Core, and Extended scenarios, supported by specific governance, labor, data and AI, KPI, failure condition, challenge, and risk structures.

7.4.2 What this Blueprint does not claim (in one paragraph)

It does **not** claim that the Fund Our Schools Blueprint will or should be implemented exactly as written; that permanent funds are always the best funding mechanism; that specific learning, wellbeing, or retention effects are already known; that political and institutional barriers will be easy to overcome; or that all communities should adopt the same design. Where the Blueprint sounds confident, that confidence is about the **existence and internal coherence** of one possible design under stated assumptions, not about its inevitability or universal desirability.

7.4.3 How to read and use it

The Blueprint should be read as:

- A worked example of teacher-first, equity-centered, climate-responsible, job-creating AI and digital infrastructure;
- A **challenge and foil** for alternative designs (“If not this, show us yours”);
- A source of tools and templates that can be adapted even without the full Fund (for example, steward roles, KPIs, challenge mechanisms, AI literacy templates, contract clauses);
- A generator of research questions and data needs, not the last word on answers.

Appendix F gives a short guide to “how to disagree productively” with the Blueprint, on the assumption that disagreement is healthy—but only if it comes with an equally concrete alternative.

7.5 IES-Compatible Research Agenda: Blueprint as Challenge

Major public research funders such as the **Institute of Education Sciences (IES)** typically look for work that is:

- Conceptually grounded;
- Empirically testable;
- Focused on student and/or teacher outcomes;
- Clear about interventions and comparison conditions.

Even if the full Fund Our Schools Blueprint is not implemented at once, it can still generate this kind of work.

7.5.1 Research domains and questions

At least four research domains emerge:

1. **Teacher Time Layer and labor protections**
   - How do AI & Workload Stewards, non-coercion clauses, and curated co-pilots affect **teacher time use, perceived workload, autonomy, and retention** in different settings?
   - Which combinations of tools and labor protections produce sustained net time returns, and which do not?
2. **Connected Student Cohort & AI Literacy Layer**
   - How do cohort-based device and connectivity guarantees affect **access, AI literacy, and learning behaviors**, compared to more fragmented device programs?
   - What designs of AI literacy experiences (content, timing, modality, co-teaching with librarians and community educators) are most effective, and for whom?
3. **Solar Schools & Climate Spine**
   - How do climate spine investments affect **energy costs, resilience, and community engagement** for schools and libraries?
   - Does visible climate work on school sites change how educators, students, and families perceive AI and digital infrastructures and their environmental legitimacy?
4. **Governance, labor, and challenge mechanisms**
   - How do multi-level governance structures, challenge tools, and risk registers perform in practice?
   - Under what conditions do these mechanisms **change** tools, policies, or scenarios when teacher time, equity, or climate commitments are at risk?

7.5.2 Study types and designs

Several study types are a natural fit:

- **Design-based implementation studies**
  Co-design and iterate Teacher Time pilots, Connected Cohorts, or climate spine projects in partnership with educators, unions, and communities, using design-based research or design-based implementation research traditions.
- **Quasi-experimental and experimental studies**
  Cluster-randomized trials or staggered rollouts for specific components (for example, steward roles, AI literacy curricula, library-based AI hubs), where ethical and logistical conditions allow.
  Differences-in-differences or comparative interrupted time-series analyses as regions adopt Blueprint-aligned components at different times.
- **Mixed-methods governance and labor studies**
  Case studies of how governance bodies, challenge mechanisms, and risk registers work in practice, including interviews, observations, and document analysis, linked to quantitative outcomes where possible.

- **Cost-effectiveness and cost–benefit analyses**
  Comparative analyses of Blueprint-like configurations versus status-quo spending patterns on digital tools and energy; modeling of how permanent-fund-style financing compares to grant-cycle or bond-driven models over decades.

7.5.3 Measurement and instrumentation

Turning the Blueprint into research and evaluation requires attention to measurement, not just design. Appendix C sketches indicative KPIs, data sources, and frequencies. In practice, researchers and practitioners would need to:

- Select or adapt validated instruments for **teacher workload, burnout, and autonomy**;
- Use administrative and survey data to track **access, AI literacy participation, governance participation, and job creation**;
- Combine project-level data and energy modeling to refine estimates of program emissions, mitigation, and coverage ratios;
- Develop instruments for capturing how **teachers, students, families, librarians, and community organizations** perceive AI tools, governance processes, and climate projects.

The Blueprint treats these instruments as **starting points**. Local adaptation and improvement are expected.

7.5.4 Blueprint as research infrastructure

Even without the full Fund, partial implementations framed as **Blueprint-aligned pilots** could:

- Provide common constructs and vocabulary (Teacher Time Layer, Connected Cohort, coverage ratios, challenge mechanisms, AI & Workload Stewards);
- Enable cross-site comparison and eventual meta-analysis;
- Support longitudinal designs that match the multi-decade nature of infrastructure investments.

The research agenda is not “evaluate this one blueprint” so much as **use the Blueprint to structure the problem space**: to compare architectures, funding models, governance arrangements, and climate strategies under a shared set of constraints.

7.5.5 Political feasibility and coalitions

Any in-depth research agenda at this scale must reckon with politics. Implementing anything like the Fund Our Schools Blueprint would require coalitions that cross usual boundaries:

- Teachers and unions;
- Students and families;
- Libraries and community organizations;
- Climate and environmental justice groups;
- Public finance and education policy actors;

- Researchers and evaluators.

Resistance is also predictable:

- Vendors and intermediaries who benefit from fragmented, short-term procurement;
- Actors who prefer surveillance-heavy or quota-based approaches to AI use;
- Proponents of austerity who oppose long-horizon, mission-locked funding.

The Blueprint does not imagine that these tensions can be “solved by design.” What it does is make the stakes visible, so that political arguments must be about **architectures, funding models, labor protections, climate commitments, and jobs**, not just about slogans or individual tools.

7.6 Futures, Excuse Audit, and Conclusion

7.6.1 Futures

The Fund Our Schools Blueprint sits in a landscape of plausible futures for AI and digital infrastructure in public K–12 education.

One future is drift.

- AI tools proliferate as vendor features and individual workarounds.
- Teacher workload and surveillance are handled case by case, if at all.
- Devices and platforms are funded in bursts and disappear when grants end.
- Climate impacts remain off the books.
- Governance and labor responses are always chasing the last deployment.

Another future is narrow optimization.

- Systems focus on short-term metrics (test scores, narrow cost savings), using AI wherever it moves the needle.
- Teacher time, equity, and climate are treated as “nice if they happen” but not as constraints.
- Infrastructure is built without long-horizon funding or net-negative climate design; when the money dries up, so does the infrastructure.

The Blueprint points toward a third future.

- AI and digital systems are treated as **public infrastructure** with long lives, not just a sequence of apps.
- Teacher time, equity, climate responsibility, and jobs are treated as **hard constraints**, on par with budgets and safety.
- Multi-level governance and labor protections are built in from the start.

- Libraries, community organizations, and climate projects are part of the system, not bolted on as the last line of a grant application.

This future is not inevitable. The claim here is modest: **it is possible**, and the math says it is doable under conservative assumptions. If we end up somewhere else, it will be because of choices, not because there was no alternative.

7.6.2 Excuse audit

The Blueprint is also an **excuse audit**. It takes some common reasons for inaction and puts them under pressure.

- **"We don't know what a better system would look like."**
  This document is one answer. It might not be the best, but it removes that excuse.
- **"It's impossible to fund something like this."**
  The Blueprint shows that under clearly stated conditions, a permanent fund model is plausible. If those conditions are rejected, the question becomes: **what** funding architecture do you propose instead, with what trade-offs?
- **"We can't do anything meaningful about climate at the program level."**
  The climate spine and coverage-ratio framing show that program-level responsibility is possible. If this is not pursued, then there should be a clear explanation for why not.
- **"Governance and labor protections are too complicated."**
  The governance, labor, and risk sections show that these things can be designed and costed. If they are omitted, it is not due to lack of ideas, but by choice.

The Blueprint does not cancel politics. It just makes it harder to hide behind vagueness.

7.6.3 Conclusion

This thesis started with a blunt question:

If AI and digital tools are going to be woven into public K–12 education, what would it mean to design them so that **teacher time, equity, and climate responsibility** are treated as constraints rather than afterthoughts—and to do it in a way that **creates good jobs** instead of cutting them?

The answer here is one possible system:

- A **Fund Our Schools Permanent Fund** that anchors long-horizon commitments with an expected ≈**$6B** annual payout from a **$150B** corpus;
- A **four-layer architecture** that puts Teacher Time first, guarantees Connected Student Cohorts and AI literacy, couples digital infrastructure to a Solar Schools & Climate Spine, and centers Libraries & Community;

- Governance, labor, data, and AI, KPI, failure, challenge, and risk tools that give these commitments institutional weight.

Along the way, the Blueprint has tried to keep the math honest. It uses conservative planning numbers, cost bands, and climate assumptions. It shows that the same program that improves schools and youth opportunities can also support on the order of 60,000–100,000 gross job-years every year in education, climate, and community roles, and remain net-negative on carbon within its boundary. These are gross jobs supported by the program, not a net figure after accounting for any displacement elsewhere in the economy.

The bigger point, though, is not just that this is technically and fiscally doable. It is that **saying "no" to this kind of design is not neutral**. In a softening labor market, in a climate crisis, and in a public education system where teachers and young people are already stretched, rejecting teacher-first, equity-centered, climate-responsible, job-creating infrastructure is a choice to keep the status quo: more drift, more vendor capture, more burnout, more avoidable harm.

This Blueprint does not ask everyone to agree with every detail. It asks for something simpler and harder: if you do not want **this** version of better schools, then put your own version on the table—with numbers, constraints, and accountability—and explain why it does more for students, teachers, communities, jobs, and the climate than this one does.

That is the Fund Our Schools Challenge.

Appendix A – Cost Modeling Tables

A.1 Overview

This appendix shows how the Fund Our Schools Blueprint's **Lean, Core, and Extended** scenarios are built from simple components: unit costs, volumes, and national scale assumptions.

Key national anchors:

- Public school teachers: ≈3.8 million full- and part-time public school teachers in 2020–21. (National Center for Education Statistics) More recent NCES data show somewhat fewer public school teachers; the model keeps the 3.8 million figure as a rounded, conservative planning anchor that also covers teacher-adjacent roles. (National Center for Education Statistics)
- **Public K–12 students:** 49.6 million in preK–12 in fall 2022. (National Center for Education Statistics)
- **Average public school teacher salary:** $66,397 in 2021–22. (National Center for Education Statistics)
- **Typical Chromebook price range for schools:** $200–$400 per device, depending on specs and volume purchasing. (TinyGrab)
- **K–12 energy spending:** school districts spend over **$8 billion/year** on energy; at least 30% is estimated to be wasted, and 10% savings is achievable with low-cost measures alone. (ENERGY STAR)

From 49.6 million students, a **single grade-level cohort** is ≈3.8 million students (49.6 ÷ 13).

A.2 Cost categories

The Blueprint groups costs into five repeatable layers:

1. **Teacher Time Layer**
    - Teacher devices and software
    - AI co-pilot services
    - Paid learning time
    - AI & Workload Steward positions
    - Support and administration
2. **Connected Student Cohort & AI Literacy Layer**
    - Devices for a national student cohort
    - Home connectivity supports
    - AI literacy curriculum and staff support
    - Evaluation and light research
3. **Solar Schools & Climate Spine**

    - Solar PV on schools, libraries, and community sites
    - Efficiency upgrades for buildings
    - Local climate projects
4. **Libraries & Community Layer**
    - Infrastructure for libraries and community organizations
    - Staff time for AI, digital, and youth programming
5. **Governance, Evaluation, and Risk**
    - National Fund Board
    - State and regional councils
    - Local Fund Our Schools Committees
    - Evaluation, research, and risk management

A.3 National scale assumptions

- Teachers covered: **3.8 million** public school teachers. (National Center for Education Statistics)
- Cohort students covered each year: **3.8 million** (one national grade-level cohort). (National Center for Education Statistics)
- **Teacher hourly cost (fully loaded):**
    - Annual salary ≈$66,400, (National Center for Education Statistics)
    - Assume ≈1,800 working hours/year → base hourly ≈$37.
    - With benefits and overhead at ~1.4×, effective cost ≈$52/hour.

We use that hourly rate in the paid learning time line.

A.4 Unit costs and volumes

Table A1. Example cost structure at national scale (full build-out, annualized)

All dollar values rounded; "B" = billion; "M" = million.

Layer / Category	Unit (per year)	Quantity (national)	Unit cost (USD)	Annual subtotal (USD)	Rationale
Teacher devices & software	Per teacher	3.8M teachers	**$200/teacher-year** (≈$800 laptop over 4 yrs + mgmt & licenses)(TinyGrab)	**≈$0.76B**	Covers teacher-grade laptop/Chromebook and core software.
AI co-pilot services	Per teacher	3.8M	**$120/teacher-year** (≈$10/month net	**≈$0.46B**	Shared AI co-pilot capacity,

Layer / Category	Unit (per year)	Quantity (national)	Unit cost (USD)	Annual subtotal (USD)	Rationale
			after edu discounts)		not mandatory usage.
Paid learning time	Per teacher (3 hours)	3.8M	**$200/teacher-year** (≈3 hrs × ≈$52/hr, incl. overhead)	**≈$0.76B**	Paid time to learn, experiment, and tune workflows.
AI & Workload Stewards	FTE positions	3,800 FTE (≈1 per 1,000 teachers)	**$130,000/FTE-year**	**≈$0.49B**	Specialist roles for workload, not usage quotas.
Student devices (cohort)	Per cohort student	3.8M students	**$125/student-year** (≈$500 device over 4 yrs + support) (TinyGrab)	**≈$0.48B**	Cohort model rather than universal 1:1.
Home connectivity supports	Per eligible student	1.33M students (≈35% of cohort)	**$360/student-year** (≈$30/month broadband/hotspot subsidy)	**≈$0.48B**	Targets students without reliable home broadband.
AI literacy curriculum & supports	Per cohort student	3.8M	**$50/student-year**	**≈$0.19B**	Curriculum materials, assessment, teacher PD.
School solar PV	Per kW (annualized)	2,000 MW = 2,000,000 kW	PV capex ≈$1.75/Wdc for community/commercial scale → ≈$1,750/kW(Research Hub); annualized over 25 yrs → **≈$130/kW-yr**	**≈$0.26B/yr**	2 GW on schools; community-scale cost benchmark.
Library/ community solar PV	Per kW (annualized)	500 MW = 500,000 kW	Same **$130/kW-yr**	**≈$0.07B/yr**	0.5 GW on libraries and community sites.
Efficiency upgrades	Per upgraded site (annualized)	10,000 school/library sites	Deep retrofit ≈$2M/site, 25-yr life → **≈$130,000/site-yr**	**≈$1.30B/yr**	Targets highest energy-burden buildings.
Local climate projects	Per project	2,000 projects	**$500,000/project-yr** blended capex+opex	**≈$1.00B/yr**	Community renewables, retrofits, and sequestration.
Library/	Per site	40,000	**$40,000/site-yr**	**≈$1.60B/**	Devices,

Layer / Category	Unit (per year)	Quantity (national)	Unit cost (USD)	Annual subtotal (USD)	Rationale
community infrastructure		library/community sites		**yr**	connectivity, fit-out, refresh.
Library/ community staff time	FTE equivalents	10,000 FTE	**$90,000/FTE-yr**	≈**$0.90B/ yr**	Librarians, digital navigators, youth workers.
Governance & evaluation	% of direct program costs	–	**≈6%** of direct costs (typical overhead band)	**Scenario-dependent**	Fund Board, councils, committees, evaluation, risk.

This **full build-out envelope** is deliberately larger than what any single scenario spends in early years; the **Lean, Core, and Extended** scenarios each fund a different **slice and pace** of this envelope.

A.5 Scenario cost totals

Using the unit costs and volumes above, plus phasing assumptions (for example, slower climate build-out in Lean, fuller cohort coverage in Extended), we summarize approximate annual program costs as:

Table A2. Annual program cost by scenario (rounded)

Layer / Category	Lean (USD, B)	Core (USD, B)	Extended (USD, B)
Teacher Time Layer	≈1.1	≈1.5	≈1.9
Connected Cohort & AI Literacy	≈0.7	≈1.0	≈1.3
Solar Schools & Climate Spine	≈0.6	≈0.9	≈1.3
Libraries & Community Layer	≈0.2	≈0.3	≈0.4
Governance, Evaluation, Risk	≈0.2	≈0.25	≈0.28
Total annual program cost	**≈$2.8–3.0B**	**≈$4.0–4.1B**	**≈$5.2–5.3B**

A.6 Relation to the permanent fund

The Blueprint's funding model uses a **$150 billion** Fund Our Schools Permanent Fund and targets a **4% real annual payout**, which yields about **$6 billion per year** for program spending and guardrails.

- $150,000,000,000 × 0.04 = **$6,000,000,000 per year**.

Even the **Extended** scenario remains **below** this $6B line, leaving headroom for:

- Volatility in investment returns,
- Co-funding and matching dollars, and
- Conservative cost assumptions.

Appendix B – Climate Modeling and Coverage Ratios

B.1 Overview and data sources

The Blueprint tracks the **climate impact** of the program as a whole:

- **E_prog –** annual greenhouse gas (GHG) emissions from devices, networks, and AI workloads, plus relevant infrastructure.
- **E_mit –** annual emissions avoided or sequestered via solar PV, building efficiency, and local climate projects.
- **Coverage ratio –** E_mit ÷ E_prog.

Key external anchors:

- **U.S. grid emissions factor:** eGRID 2023 reports a national average of about **771 lb CO_2e/MWh**, or roughly **0.35 kg CO_2e per kWh**. (US EPA)
- **Laptop life-cycle emissions:** product carbon footprints for typical laptops cluster in the **160–360 kg CO_2e** range per device over its life, with most studies finding **75–85% of that in production** and an average life of 3–4 years. (HP Support)
- We adopt **≈300 kg CO_2e per laptop** over a 4-year life → **≈75 kg CO_2e per device-year** as a round planning value consistent with these ranges.

B.2 Program emissions (E_prog)

The main drivers of program emissions are:

1. **Devices for teachers and cohort students** (embodied and use phase)
2. **Electricity for device use**
3. **Networks and AI compute**
4. **Other digital infrastructure**

Device counts:

- **Teacher devices:** 3.8M
- **Cohort student devices:** 3.8M
- **Total active devices:** 7.6M

Using **75 kg CO_2e per device-year**, devices contribute:

- 7.6M devices × 75 kg CO_2e/device-year ≈ **570,000 tCO_2e/year**.

For electricity use, assume:

- Each device uses ≈100 kWh/year of electricity across school and home. (This is consistent with typical laptop energy use under educational workloads in recent ICT LCA work.) (MDPI)
- 7.6M devices × 100 kWh/year = **760 million kWh/year**.
- 760M kWh × 0.35 kg CO_2e/kWh ≈ **266,000 tCO_2e/year**. (US EPA)

For networks and AI compute, we take a conservative aggregate estimate:

- Incremental AI and network load for teaching, learning, and administration is modeled as **≈600,000 MWh/year** of electricity across data centers and networks. Recent ICT sector LCAs highlight that networks and data centers form a large share of use-phase emissions. (ScienceDirect)
- 600,000 MWh = 600M kWh × 0.35 kg CO_2e/kWh ≈ **210,000 tCO_2e/year**.

We add a modest "other infrastructure" allowance for servers, small edge devices, and residual activities: **100,000 tCO_2e/year**.

Table B1. Program emissions components (Core scenario, planning values)

Component	Driver (annual)	Emissions factor	Annual E_prog (tCO_2e)
Device manufacture (teachers)	3.8M laptops, 4-yr life → ≈0.95M new devices/year	≈75 kg CO_2e/device-year	≈285,000
Device manufacture (cohort)	3.8M student devices, 4-yr life → ≈0.95M/year	≈75 kg CO_2e/device-year	≈285,000
Device electricity (all devices)	≈760M kWh/year	0.35 kg CO_2e/kWh	≈266,000
Networks + AI compute	≈600M kWh/year	0.35 kg CO_2e/kWh	≈210,000
Other digital infrastructure	Servers, edge devices, misc.	Lumped allowance	≈100,000
Total program emissions (E_prog)	–	–	**≈1,146,000 ≈ 1.15 Mt**

We round E_prog in the coverage tables to **≈1.2 MtCO_2e/year** for the **Core** scenario.

B.3 Mitigation and avoided emissions (E_mit)

E_mit comes from:

1. **Solar PV on schools, libraries, and community sites**
2. **Building efficiency upgrades**
3. **Local climate projects**
4. **A small, high-integrity removals margin**

Solar PV generation

- Installed PV capacity: 2,500 MW (2,000 MW on schools + 500 MW on libraries/community sites).
- Typical capacity factors for U.S. commercial/community solar PV projects are around **17–20%**; we use **18%** as a middle value. (Energy Markets & Planning)
- Annual generation: 2,500 MW × 8,760 h/year × 0.18 ≈ **3.94 TWh/year** (3.94 billion kWh).
- Avoided emissions: 3.94B kWh × 0.35 kg CO_2e/kWh ≈ **1.38 MtCO_2e/year**. (US EPA)

Building efficiency

- U.S. K–12 districts spend over **$8B/year** on energy, with significant waste. (ENERGY STAR)
- Taking a conservative national average price of $0.12/kWh implies ≈66.7B kWh/year.
- Deep upgrades on a subset of about 10,000 sites could credibly reduce total K–12 building energy use by several percent; here we model **3 TWh/year (3B kWh)** of verified savings attributable to the Blueprint.
- Avoided emissions: 3B kWh × 0.35 kg CO_2e/kWh ≈ **1.05 MtCO_2e/year**.

Local climate projects

- Mix of community renewables, retrofits, and verifiable sequestration (e.g., urban tree planting with robust MRV, soil projects, etc.).
- Modeled as delivering **≈0.5 MtCO_2e/year** of net avoided or removed emissions at scale.

Removals margin

- A small allocation for high-integrity removals (for example, additional reforestation or soil carbon projects, carefully governed), capped at **0.1 MtCO_2e/year**.

Table B2. Mitigation and avoided emissions (Core scenario)

Component	Driver	Method	Annual E_mit (tCO_2e)
Solar – schools & community sites	2.5 GW PV, CF ≈18%	Displaces grid electricity	≈1,380,000
Efficiency upgrades	3 TWh/year savings	Displaces grid electricity	≈1,050,000
Local climate projects	Portfolio of local mitigation/removal	Project-level MRV	≈500,000
Removals margin	Limited removals	High-integrity removal projects	≈100,000
Total mitigation (E_mit)	–	–	**≈3,030,000 ≈ 3.03 Mt**

B.4 Coverage ratios by scenario

Using the above as **Core** scenario values:

- **Core:** E_prog ≈1.2 Mt, E_mit ≈3.0 Mt.
- **Lean:** smaller PV build-out, fewer efficiency projects, and smaller digital footprint; modeled here as ≈70% of Core scale.
- **Extended:** deeper cohorts and AI use plus larger climate spine; modeled here as ≈130% of Core in both emissions and mitigation, with coverage still above 1.

Table B3. Coverage ratios by scenario (rounded)

Scenario	E_prog ($MtCO_2e$/year)	E_mit ($MtCO_2e$/year)	Coverage ratio (E_mit / E_prog)
Lean	≈0.85	≈1.2	**≈1.4**
Core	≈1.2	≈3.0	**≈2.5**
Extended	≈1.6	≈3.6	**≈2.3**

All scenarios are **net-negative** on GHG emissions at the program level, even under conservative grid assumptions. As the grid decarbonizes, coverage improves further unless the program is dramatically expanded without matching climate investments.

Appendix C – KPIs, Data Sources, and Failure Conditions

C.1 Overview

This appendix defines **key performance indicators (KPIs)** and **failure conditions** used to monitor the Blueprint. The aim is to:

- Measure what we say we care about: **teacher time, equity, climate, governance, and jobs**.
- Pre-define patterns that count as **failure** and require action, not spin.

Each KPI is specified by:

- Name and construct
- Unit of measure
- Data source(s)
- Frequency
- Disaggregation (equity splits)
- Failure condition triggers

C.2 Teacher time and conditions

Table C1. Teacher time and conditions KPIs

KPI name	Definition	Unit	Source	Frequency	Disaggregation	Failure condition trigger
Teacher weekly hours	Average weekly hours worked (all tasks)	Hours/week	Annual surveys + time-use subsample	Annual	School, subject, race, SES	≥**+3 hours/week** above baseline for 2+ years in ≥20% of high-need schools.
Time on admin/data tasks	Share of workweek on admin/data vs instruction	% of hours	Time-use studies, logs	Every 2 yrs	School, subject	Admin share rises by **5+ percentage points** in AI-heavy schools vs comparison

KPI name	Definition	Unit	Source	Frequency	Disaggregation	Failure condition trigger
						schools.
Burnout / exhaustion index	Standardized burnout scale (e.g., MBI-style index)	Index score	Teacher surveys	Annual	School, subgroup	Index worsens by **≥0.3 SD** in AI-heavy schools while stable elsewhere.
Autonomy / control index	Perceived autonomy over tech/AI use	Index score	Surveys	Annual	School, subgroup	Autonomy drops by **≥0.3 SD** in AI-heavy sites relative to baseline.
Retention and transfer rates	Year-over-year retention / transfers	% teachers	HR/ administrative data	Annual	School, subgroup	Retention **≥5 percentage points worse** in AI-heavy schools than matched non-AI peers over 3 years.

Failure conditions trigger **automatic review** of the tools and workflows driving the pattern, with power to pause or roll back deployments.

C.3 Equity and access

Table C2. Equity and access KPIs

KPI name	Definition	Unit	Source	Frequency	Disaggregation	Failure condition
Device access	Students with device meeting agreed specs	%	Admin data + surveys	Annual	Grade, race, SES, disability, ELL, locale	Any equity group ≤**10 percentage points** below

KPI name	Definition	Unit	Source	Frequency	Disaggregation	Failure condition
						overall access for 2+ years.
Home connectivity	Students with reliable home broadband (not mobile-only)	%	Surveys + program data	Annual	Same as above	Connectivity gap >**15 percentage points** for low-income or rural students vs non-low-income urban peers.
AI literacy participation	Completion of AI literacy sequence	%	Course/attendance records	Annual	Same as above	Participation <**70%** in any high-need subgroup while overall is ≥85%.
Meaningful AI use	Index of higher-order vs drill use	Index	Observations + log analysis	Every 2 yrs	Same as above	Index stagnates or declines in high-need communities while rising elsewhere.

C.4 Climate performance

Table C3. Climate KPIs

KPI name	Definition	Unit	Source	Frequency	Failure condition
Program emissions (E_prog)	Annual program emissions	tCO_2e	Modeled + metered data	Annual	E_prog grows >**10%** for 3+ years without comparable growth in E_mit.
Mitigation (E_mit)	Annual mitigation/avoidance	tCO_2e	Project monitoring + modeling	Annual	Mitigation growth ≤0% while program scale grows.
Coverage ratio	E_mit ÷ E_prog	Ratio	Computed	Annual	Coverage **<1.0** for 2 consecutive years in any scenario.
Projects delivered	Completed climate projects/year	Count	Implementation data	Annual	<**80%** of planned projects delivered for

KPI name	Definition	Unit	Source	Frequency	Failure condition
					3 consecutive years.

C.5 Governance and participation

Table C4. Governance and participation KPIs

KPI name	Definition	Unit	Source	Frequency	Failure condition
Seats filled on governance bodies	Required seats filled by category	%	Governance records	Annual	Key seats (teachers, students, communities, unions, libraries) unfilled for 2 consecutive years.
Meetings held and minuted	Compliance with meeting/minute requirements	%	Governance records	Annual	Less than 75% of required meetings held and minuted over a 2-year span.
Challenge volume and closure	Challenges filed and closed within agreed timelines	Count/%	Challenge logs	Annual	>**25%** of challenges unresolved or overdue by more than 90 days.
Incidents logged	Data/AI incidents recorded	Count	Incident system	Annual	Repeated incidents with same root cause not addressed within 1 year.

C.6 Jobs and local economic impact

Research on employment multipliers shows:

- Each $1M in **education spending** can support roughly **13–15 total jobs** (direct + indirect + induced) in the U.S. economy. (Watson School of International Affairs)
- Energy efficiency and clean energy investments also show robust jobs per $1M, with input–output models often generating multipliers in the high single digits or low double digits. (ScienceDirect)

Given annual program spending in the **$4–5.3B** range in Core and Extended scenarios, it is reasonable to expect **tens of thousands of job-years per year** across education, libraries, community organizations, and clean energy and construction work.

Table C5. Jobs and local economic impact KPIs

KPI name	Definition	Unit	Source	Frequency	Failure condition
Job-years supported	Estimated FTE job-years per year	Count	Program + IO modeling	Annual	Realized job-years <**70%** of modeled

KPI name	Definition	Unit	Source	Frequency	Failure condition
					expectation over a 3-year period.
Local jobs share	Share of contracts/positions awarded locally	%	Procurement + HR data	Annual	Local jobs share <**40%** in high-need communities 5+ years into the program.
Youth/early-career jobs	Share of job-years earmarked for youth, apprentices, and early-career workers	%	Program + contractor data	Annual	Share <**20%** of job-years in climate and construction spending 5+ years into the program.

Appendix D – Sample Governance and Labor Clauses

D.1 Purpose

This appendix provides **model language** for policies, MOUs, and contract clauses aligned with the Blueprint's principles:

- AI as **co-pilot, not pilot**,
- Protection of **teacher time and autonomy**,
- Strong **anti-surveillance** rules, and
- Real **governance power** for educators, students, families, libraries, and communities.

These are starting points to be adapted locally.

D.2 Non-coercion in AI use

Non-Coercion in AI Tool Use

1. No educator, paraprofessional, librarian, or support staff member ("covered staff") shall be required to use any AI-enabled tool, workflow, or platform as a condition of employment where such use would conflict with professional judgment, safety, or the terms of this agreement.
2. Covered staff may decline to use an AI-enabled tool where they have reasonable concerns about workload, privacy, equity, bias, or student harm. Such refusal shall not be considered insubordination and shall not be used as a basis for discipline, negative evaluation, or retaliation.
3. Concerns about AI-enabled tools shall be addressed through the established **challenge and review processes** (see Appendix E) and through existing grievance and problem-solving procedures.
4. The employer shall not set **mandatory individual usage quotas** for AI-enabled tools. Program-level adoption metrics may be discussed but must explicitly respect professional autonomy and this non-coercion clause.

D.3 Anti-surveillance and "no scoring" protections

Prohibition on Surveillance Uses of AI

1. AI-enabled tools funded or approved under the Fund Our Schools Blueprint may not be used to:
   a. Covertly monitor the activity of employees or students for performance evaluation, discipline, or productivity scoring (for example, keystroke logging, always-on webcam

monitoring, or hidden time-tracking).
b. Generate individual “risk scores,” “behavioral profiles,” or other automated classifications that can be used for discipline, policing, placement, or access to services.
c. Conduct biometric or so-called “emotion AI” monitoring in classrooms, buses, cafeterias, restrooms, or any other school or library facility.

2. Any proposed new use of AI or data that could affect employment status, discipline, placement, or access to services must be:
   a. Disclosed in plain language;
   b. Discussed with relevant unions and Local Fund Our Schools Committees; and
   c. Approved through the governance processes described in Chapter 6.
3. Violations of this clause trigger an immediate **incident review** and may result in suspension or termination of the tool, contract remedies, and other remedial measures.

D.4 AI & Workload Steward role

AI & Workload Steward – Model Role Description

Purpose
The AI & Workload Steward ensures that AI-enabled tools and digital systems **reduce unnecessary workload** and support humane, sustainable jobs.

Key Duties

1. Map how work is currently done, with educators, paraprofessionals, and support staff, and identify bottlenecks and pain points.
2. Co-design and test workflows that use AI to eliminate low-value tasks, reduce duplication, and streamline work without increasing surveillance or cutting corners on quality and equity.
3. Monitor whether promised workload reductions actually occur, including through surveys and time-use studies.
4. Flag uses of AI and data that appear to increase workload, erode autonomy, or violate non-coercion or anti-surveillance protections, and bring these concerns into formal challenge and governance processes.
5. Communicate changes, support staff in adopting new workflows, and feed back what is and isn’t working.

Selection and Accountability

- Stewards are selected with meaningful input and binding votes for educators and unions.
- Their accountability runs primarily to the staff they serve and to the Local Fund Our Schools Committee, not to vendor adoption metrics.
- Steward roles are funded by the program and protected against retaliation for raising concerns.

D.5 Use of AI-generated data in evaluation

Limits on Use of AI-Generated Data in Evaluation

1. Data produced by AI-enabled tools (usage logs, automated scores, behavior flags, and similar outputs) shall **not** be used as the primary or sole basis for:
   a. Employee evaluation, promotion, assignment, or discipline; or
   b. Student placement, retention, discipline, or access to services.
2. Where AI-generated data are considered as part of a broader evidence set, the employer must ensure that:
   a. Affected individuals are informed, in plain language, about what data are used and how;
   b. There is a human review process that can contextualize or override automated outputs;
   c. Individuals have a clear path to **challenge and correct** AI-generated data or conclusions;
   d. Automated data are supplemented with other sources of evidence, including direct observation and professional judgment.
3. Automated outputs that have not been independently validated for the intended use shall not be used in high-stakes decisions.

D.6 Data Purpose Schedules and vendor obligations

Data Purpose Schedules and Vendor Contracts

1. For each AI-enabled tool or system, the district or employer shall maintain a **Data Purpose Schedule** specifying:
   a. Data collected (fields and categories);
   b. Intended purposes;
   c. Storage locations and retention periods;
   d. Access rights and conditions;
   e. De-identification or aggregation practices;
   f. How data subjects can request access, correction, or deletion where applicable.
2. Vendor contracts must:
   a. Limit data collection and use to the specified purposes;
   b. Prohibit sale of personal data or use for advertising;
   c. Require strong security controls, breach notification, and audit rights;
   d. Provide for data portability and deletion at contract termination.
3. Any expansion of data collection or reuse beyond an existing Data Purpose Schedule must go through governance, labor, and community review.

D.7 Governance participation and time

Governance Participation and Paid Time

1. The employer shall provide paid release time, coverage, and necessary supports (for example, travel or childcare where appropriate) for educators, librarians, staff, students, and family representatives serving on Local Fund Our Schools Committees and related bodies.
2. Governance participation is recognized as part of regular professional duties, not voluntary overtime.
3. Governance bodies will follow composition rules in Chapter 6, including reserved seats for unions, students, families, libraries, and community organizations.

Appendix E – Challenge and Risk Register Templates

E.1 Purpose

This appendix shows how people can **raise concerns** and how the system tracks **risks**.

The core idea: if something is going wrong, there must be a **simple form**, a **clear path**, and a **tracked response**.

E.2 Challenge process overview

Local Fund Our Schools Committees commit to:

1. Accept challenges in a **standard format** (Appendix E.3).
2. Log each challenge with a unique ID.
3. Provide an **initial response within 30 days** and a **final decision within 90 days** where feasible.
4. Escalate systemic or unresolved issues to state/regional councils and, where relevant, national bodies.

E.3 Challenge form (template)

Fund Our Schools – Challenge Form (Template)

1. Who is raising this?

- Name (optional but recommended): ____________________________
- Role (check all that apply):
  - ☐ Teacher
  - ☐ Paraprofessional/support staff
  - ☐ Student
  - ☐ Family/caregiver
  - ☐ Librarian
  - ☐ Community member
  - ☐ Other: _________________________
- School / organization: ____________________________
- Preferred contact (email/phone or "through union/organization"): ____________________________

2. What are you challenging?

- Tool / policy / practice name: ____________________________
- Type (check all that apply):
  - ☐ AI or digital tool
  - ☐ Data practice
  - ☐ Workload / scheduling change
  - ☐ Climate or building project
  - ☐ Governance / participation issue
  - ☐ Other: _________________________
- Layer (if known):
  - ☐ Teacher Time Layer
  - ☐ Connected Cohort & AI Literacy
  - ☐ Solar Schools & Climate Spine
  - ☐ Libraries & Community Layer

3. What's the main concern?

- Check one or more:
  - ☐ Teacher workload / burnout
  - ☐ Student harm or inequity
  - ☐ Privacy / data / surveillance
  - ☐ Climate or environmental impact
  - ☐ Access / fairness
  - ☐ Governance / voice / transparency
  - ☐ Other: _________________________
- Short description of what's happening and to whom:
  - ______________________________
  - ______________________________

4. What have you seen or experienced?

- Concrete examples or incidents (dates, locations, what happened):
  - ______________________________
  - ______________________________
- How long has this been happening?
  - ☐ Days ☐ Weeks ☐ Months ☐ Years

5. What outcome are you seeking?

- ☐ Stop or pause this tool/policy/practice
- ☐ Change how it is used
- ☐ More support or training
- ☐ Investigation / audit
- ☐ Compensation or remedy for harm
- ☐ Other: ____

6. Anything else we should know?

-
-

For governance use only

- Challenge ID: ______________________
- Date received: ______________________
- Initial reviewer (name/role): ______________________
- Date of initial response: ______________________
- Final decision (summary): ______________________
- Date closed: ______________________
- Escalated to state/regional council? ☐ Yes ☐ No

E.4 Risk register template

Risk Register – Template

ID	Risk description	Category	Likelihood (L)	Impact (I)	Rating	Controls in place	Mitigation actions / next steps	Owner/ body	Review date
R01	Teacher workload rising in high-need schools	Teacher Time	M	H	MH	Non-coercion clause; stewards; time KPIs	Review tools; adjust workflows; add supports	Local Committee + Union	____
R02	Climate coverage ratio falls below 1.0	Climate Spine	L	H	MH	Climate investments; monitoring; coverage	Reprioritize climate spend; add high-impact	State/ Regional Council	____

ID	Risk description	Category	Likelihood (L)	Impact (I)	Rating	Controls in place	Mitigation actions / next steps	Owner/ body	Review date
						KPI	projects		
R03	Vendor lock-in for core systems	Governance	M	M	MM	Open standards; contract clauses; multi-vendor use	Diversify vendors; negotiate strong exit provisions	District IT + Council	____
R04	Equity gaps in AI literacy participation	Equity & Access	M	H	MH	Cohort design; library programs; equity KPIs	Target outreach; adapt scheduling; additional supports	Local Committee	____
R05	Data breach or privacy incident	Data & AI	M	H	MH	Security controls; vendor requirements; audits	Incident response; notification; tighten controls	Data Protection Officer	____

The rating system (L/M/H, or numeric) can be set locally; the important part is that **each risk has an owner and a next step**.

Appendix F – How to Disagree with the Blueprint

F.1 Purpose

This appendix lays out how to **seriously disagree** with the Fund Our Schools Blueprint.

Not: “I don’t like it.”
Instead: “Here is an alternative that does more for kids, teachers, communities, jobs, and the climate.”

F.2 Levels of disagreement

If you’re saying “no,” be clear about **where** you disagree:

1. **Values**
   - Do you reject treating **teacher time, equity, climate, and jobs** as non-negotiables?
   - If yes, what are you putting in their place? Test scores? Short-term savings? Something else?
2. **Architecture**
   - Do you want a different structural design?
     - Example: universal 1:1 devices instead of Connected Cohorts.
     - Example: no climate spine; leave climate to someone else.
     - Example: no Libraries & Community Layer.
   - Show how your design meets or beats this one on **teacher time, equity, climate, and jobs**.
3. **Funding model**
   - Do you disagree with using a **$150B permanent fund with a 4% payout** to generate ≈$6B/year? (FRED)
   - If yes, what’s your alternative? Annual appropriations? Bonds? One-off grants?
   - Show how your model supports **multi-decade commitments** without boom–bust cycles.
4. **Governance and labor**
   - Do you object to **multi-level governance**, non-coercion clauses, anti-surveillance rules, and AI & Workload Stewards?
   - If yes, how will your design **prevent AI from ramping up workload and surveillance**?
5. **Parameters and assumptions**
   - Do you think the **costs, climate numbers, or job multipliers** are wrong?
   - Provide your own assumptions, show your math, and explain how your scenarios change.
6. **Metrics and monitoring**
   - Do you disagree with the KPIs or failure thresholds?

- What would you measure instead, and how would that better protect the people living under your system?

F.3 A better disagreement test

A disagreement counts as **serious** if it clears three bars:

1. **Clarity**
   - You can summarize your disagreement in a page or less, and point to the level(s) above.
2. **Alternative**
   - You offer a **worked alternative**, not just "more X" or "less Y."
   - It has enough structure (layers, funding, governance, metrics) that people can cost it and model it.
3. **Comparison**
   - You can explain why your alternative does **more for students, teachers, communities, jobs, and the climate** than this Blueprint under realistic assumptions.

If you can't do that yet, you're not wrong—you're just not done.

F.4 What doesn't count as a real disagreement

Examples of "disagreements" that don't actually engage the Blueprint:

- "This is too expensive" with no math, no alternative funding model, and no explanation of what you'd cut instead.
- "We can't do climate work in schools" while schools are already spending billions on energy and living with climate impacts. (ENERGY STAR)
- "AI will fix itself" with no governance, labor protection, or data rules.
- "Teachers will figure it out" with no paid time, steward roles, or workload relief.

Those aren't disagreements with this Blueprint. They're refusals to plan.

F.5 Jobs and the disagreement test

Based on input–output work, $1M in **education spending** supports roughly **13–15 jobs**, and public investments in efficiency and clean energy also generate high job counts per $1M. (Watson School of International Affairs)

With $4–5.3B/year flowing through this Blueprint in Core and Extended scenarios, it is reasonable to expect on the order of 60,000–100,000 gross job-years per year across:

- Teaching and support staff,
- AI & Workload Stewards,
- Library and community roles,
- Construction and clean energy work.

These figures describe gross jobs supported by the Blueprint; they do not attempt to subtract any jobs that might be displaced elsewhere in the economy.

If you claim your alternative “does more for the economy,” you need to show:

- Where its jobs come from,
- What kinds of jobs they are,
- Where they are located,
- How stable they are compared to the mix here.

If your alternative “saves money” by cutting jobs, that’s not a neutral improvement. It’s a choice.

Appendix G – Detailed Note on AI Use and Workflow

G.1 Why this note exists

The Blueprint tells schools to keep AI as a **co-pilot, not the pilot**, with strong governance and labor rules. This appendix makes clear how AI tools were, and were not, used in producing this thesis.

G.2 Where AI tools were used

AI tools were used to:

1. **Explore language and structure**
   - Generate alternative ways of saying things I had already outlined or drafted.
   - Propose section headings and ordering for content I had decided to include.
2. **Check consistency**
   - Spot drift in terminology and numbers across chapters (for example, keeping the **$150B fund / $6B payout**, cost bands, and coverage ratios aligned).
   - Help keep repeated structures (like the scenario descriptions and KPI tables) internally consistent.
3. **Adversarial reading**
   - Surface questions a skeptical policymaker, teacher, union leader, or examiner might ask about feasibility, equity, climate, or jobs.
   - Stress-test whether those concerns were addressed somewhere in the Blueprint's design.

In all cases, AI was a **drafting and critique assistant**. Human judgment set the goals and constraints and made the final calls.

G.3 Where AI tools were not used

AI tools were **not** used to:

- Create or fabricate empirical data, statistics, or study findings;
- Invent citations, papers, or authors;
- Decide core values, the overall architecture, or the decision to use a permanent fund;
- Replace human judgment on feasibility, ethics, politics, or trade-offs.

All quantitative claims and literature references are grounded either in:

- Publicly verifiable sources (national statistics, peer-reviewed work, recognized policy and technical reports), or
- Explicit, transparent planning assumptions described in this document.

Any errors, blind spots, or bad calls belong to the human author.

G.4 How this mirrors the Blueprint

The way AI was used in this thesis mirrors the Blueprint's stance:

- AI as **co-pilot** for drafting and analysis, not a substitute for human judgment.
- Strong **limits** on high-stakes use (no automated grading of people, no auto-evaluation).
- Clear **governance and labor protections** around when and how AI is used.
- **Transparency** about AI's role, so readers can judge the work with open eyes.

Appendix H – References

This appendix contains the full **reference list (APA 7)** for all works cited in the thesis.

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