The Objective and the Constraints

- **The Objective:** Design a modular, container-based agrivoltaic hydroponic system for extreme desert climates.
- Sub-100 dollar capital expenditure per unit.
- 115°F ambient summer heat with high-temperature municipal water.

STRATEGIC PROPOSAL

A Dual-Track Framework: Passive Piloting and Commercial Procurement

- **Track A:** passive pilot for immediate site learning
- **Track B:** grant-backed commercial procurement
- Learn cheaply, scale correctly

PROJECT CONSTRAINTS

Reconciling Budget with Climate Realities

- Sub-100 dollar target serves as a valuable conceptual guide
- Year-round Phoenix production requires robust climate resilience
- Deliverable is a technical feasibility report, not a basic parts list

ENVIRONMENTAL RISK

Thermodynamic and Electrical Demands of Phoenix Summers

- Root-zone heat stress and exposed water lines are critical failure points
- Primary controls include shading, water-bypass loops, and buffer storage
- Commercial standard: ~160 kWh/day for climate control and operations

PHASE 1: PILOT

Track A: Low-Cost Passive Thermal Mitigation

- Install shade structures over reservoirs and primary plumbing
- Implement a manual first-flush bypass to clear hot standing water
- Log temperature, pH, electrical conductivity, and maintenance hours

PHASE 2: SCALE

Track B: Securing Grants for Commercial Procurement

- Define infrastructure, utility, and operating requirements
- Leverage pilot data to support federal and municipal grant applications
- Evaluate pre-engineered commercial container farms (e.g., Pure Greens)

STRATEGIC ROADMAP

Sequence Execution to Minimize Risk and Maximize Funding

- Track A: Implement the passive pilot to validate site conditions
- Track B: Prepare the technical report for grant submission
- Goal: Build local operational knowledge while funding commercial capacity