

Cottonputer for tomorrow

Team 1



AGENDA

02 **The History**

03 **Constraints**

04 **Design**

05 **Systems**

06 **Budget**

SITE CONSIDERATIONS

Adaptive re-use in local history

- East facing facade is close to a community centre, this will be the location of an admin centre
- Sustainability focus for net zero focus: Waste heat will be used for the surrounding the community and be a source of revenue
- A history of cotton use in the region. Cotton fueled since 19th century shaping communities and industry
- River access



THE

Design

- 210,000 sq ft for data centre
- 70,000 admin space - closer to the community
- 75 MW
- Cost - \$490m

Highlights

- Liquid river cooling
- Natural vents instead of fence
- Cotton acoustic panel (from 85% textile waste)
- Selling waste heat to community
- PV Panels due to surface area

Constraints

1. Budget Cut - full budget of \$490m
2. Noise Concerns
3. Operational Data Leak - actual energy is 40% higher
4. Historical context
5. Responsible design

DEALING WITH BUDGET CUT

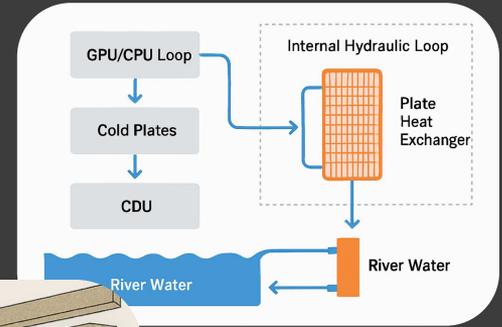
Existing facility & selling heat generation

- Existing envelope and no major upgrades on envelope
- Average cost = \$550m for 75 MW
- Savings \$60m on construction costs by using existing facility
- Selling the excess energy to the surrounding community
- Incentives

NOISE PROBLEM

Closed-loop river source free cooling system, cotton acoustic panel

- Closed loop river source
- Municipal grid mix:
 - 80% natural gas
 - 8% coal
- If we provide a heating source to the community we impact the grid mix
- Vegetation to improve acoustic and air quality



ENERGY PRODUCTION

PV Panels

- Tilt: 10° tilt
- Azimuth angle: 168
- Capacity: 2.6 MW

- Energy usage will be 17m kWh
- Production = 2.5m kWh
- We generate 15% of our consumption

