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**UC Tech Awards 2023 Candidate**

**Category:** INNOVATION **Name:** SDSC UPS Battery Project Team

**Number of people:** (7)

**Location:** UC San Diego

1. **Person submitting the application/nomination**
   1. William Homan, Technical Project Manager, San Diego Supercomputer Center, UC San Diego, Staff member
   2. **Email address:** 
      1. whoman@ucsd.edu
   3. **The name of your organization:**
      1. UC San Diego
2. **Award category:** Innovation
3. **Name of person, name of the team, or name of the project to receive the award**
   1. Team – SDSC UPS Battery Project Team
4. **All project team members -** 
   1. Christine Kirkpatrick
      1. Title - SDSC Division Director of Research Data Services
      2. Department – SDSC
      3. Location – San Diego
      4. Staff
      5. Email - christine@sdsc.edu
   2. Brian Balderston
      1. Title - SDSC - Director of Infrastructure and Deputy Director, Research Data Services
      2. Department – SDSC
      3. Location – San Diego
      4. Staff
      5. Email - brian@sdsc.edu
   3. Tom Tate
      1. Title - SDSC Data Center Manager
      2. Department – SDSC
      3. Location – San Diego
      4. Staff
      5. Email - ttate@sdsc.edu
   4. Tom Chavez
      1. Title – UC San Diego Facilities Maintenance Lead
      2. Department – FM
      3. Location – San Diego
      4. Staff
      5. Email – n/a
   5. Keith Green
      1. Title - SDSC Data Center Operations Lead
      2. Department – SDSC
      3. Location – San Diego
      4. Staff
      5. Email - keg031@sdsc.edu
   6. Andrew Ferbert
      1. Title - SDSC Platform Services Manager
      2. Department – SDSC
      3. Location – San Diego
      4. Staff
      5. Email - dferbert@sdsc.edu
   7. Chris Battistuz
      1. Title - SDSC Financial Services Manager
      2. Department – SDSC
      3. Location – San Diego
      4. Staff
      5. Email - cbattistuz@sdsc.edu
5. **Which location was affected by the work?** (the name(s) of the organization affected)
   1. **UC San Diego**
6. **Summary**: SDSC pioneered the commercial application of an innovative technology removing tens of thousands of pounds of toxic batteries, replacing them with an environmentally friendly and rechargeable alternative, and increasing the capacity ~8x. This allows for time to gracefully shut down systems in the event of a catastrophic outage, averting considerable risk to the UC system in data and system loss.
7. **Narrative**:

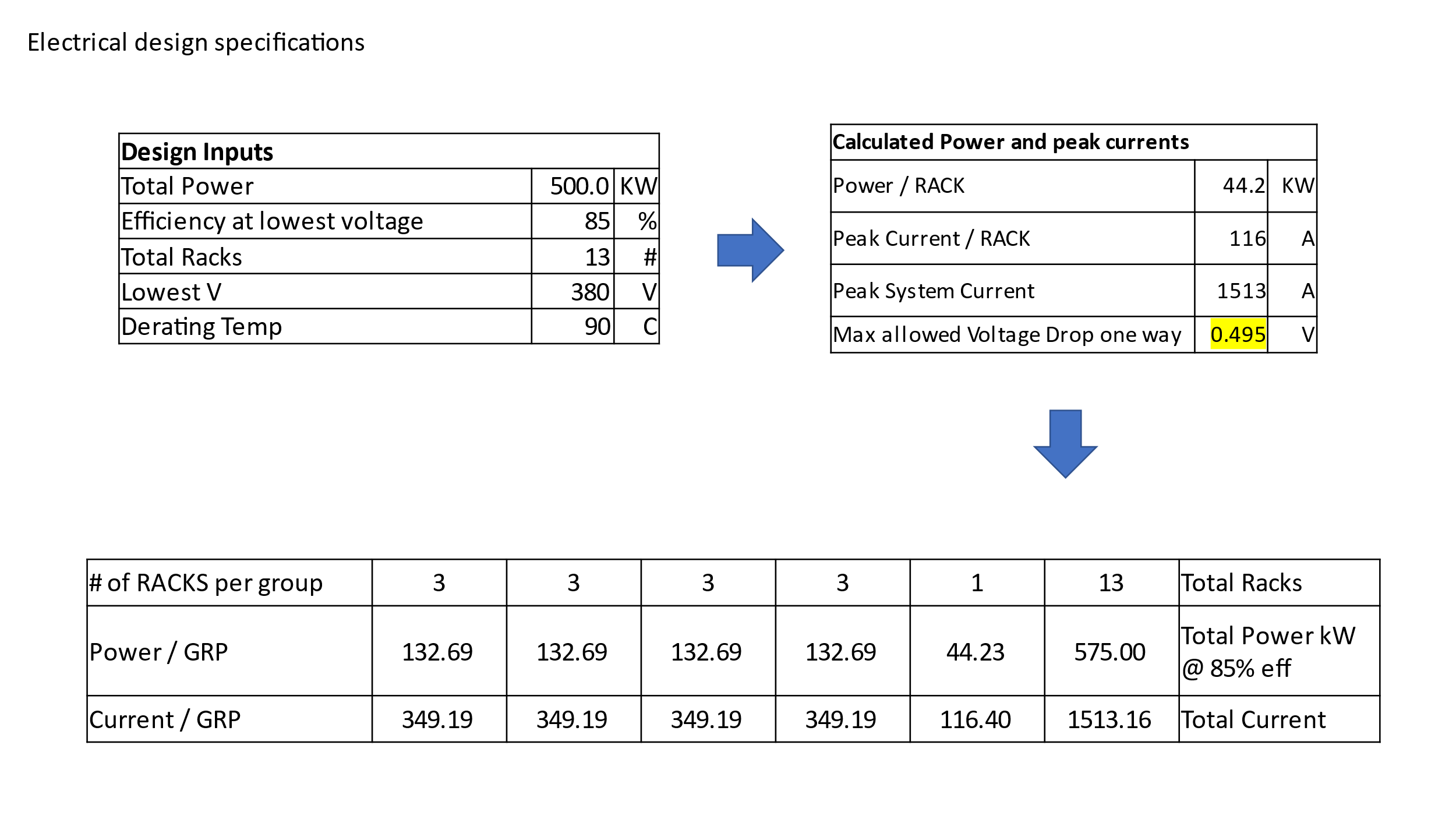
The United Nations Environment Program has estimated that 86 percent of the world’s lead consumption is for the production of lead-acid batteries. Working to reduce our dependence upon this resource is good for everyone on the planet. In the Spring of 2022, a team from the San Diego Supercomputer Center (SDSC) at UC San Diego activated a completely new approach to backup power needs, by replacing tens of thousands of pounds of toxic batteries with a more environmentally friendly alternative.

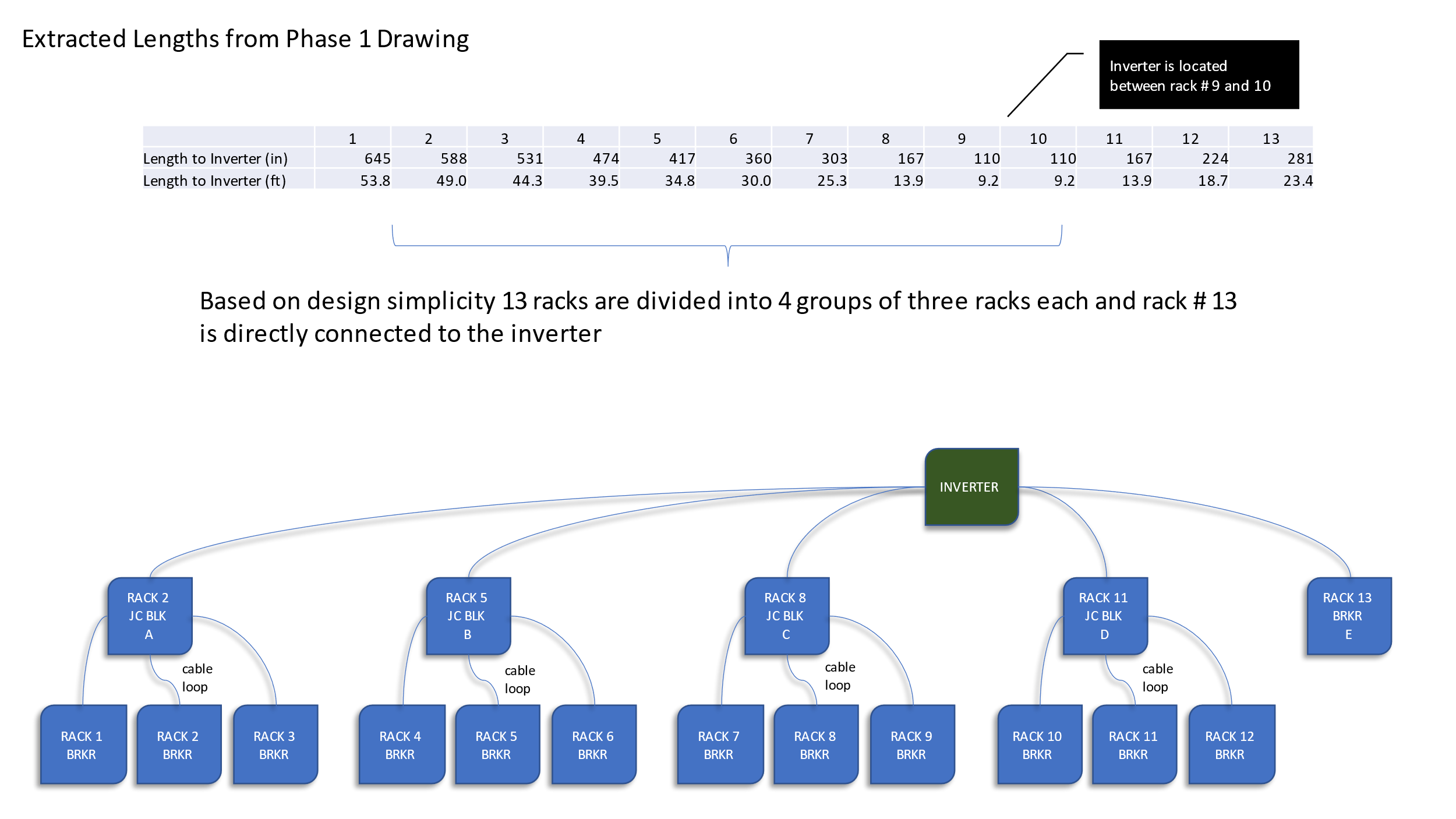
Because backup power is a crucial element to run a data center and something that needs to remain resilient, for many years the solution rested on traditional lead-acid Uninterruptible Power Supply (UPS) options. While this solution remained effective, there is a global desire to embrace eco-friendly operations and when coupled with the University of California’s aggressive goals for carbon neutrality meant a change was needed. Hence, SDSC partnered with a vendor to deploy the world’s first enterprise application of an innovative alternative. This system uses zinc manganese-dioxide cells, much like household batteries – except they are rechargeable for ten or more years due to a proprietary separator between the cathodes that allows for long-term charging without degradation.

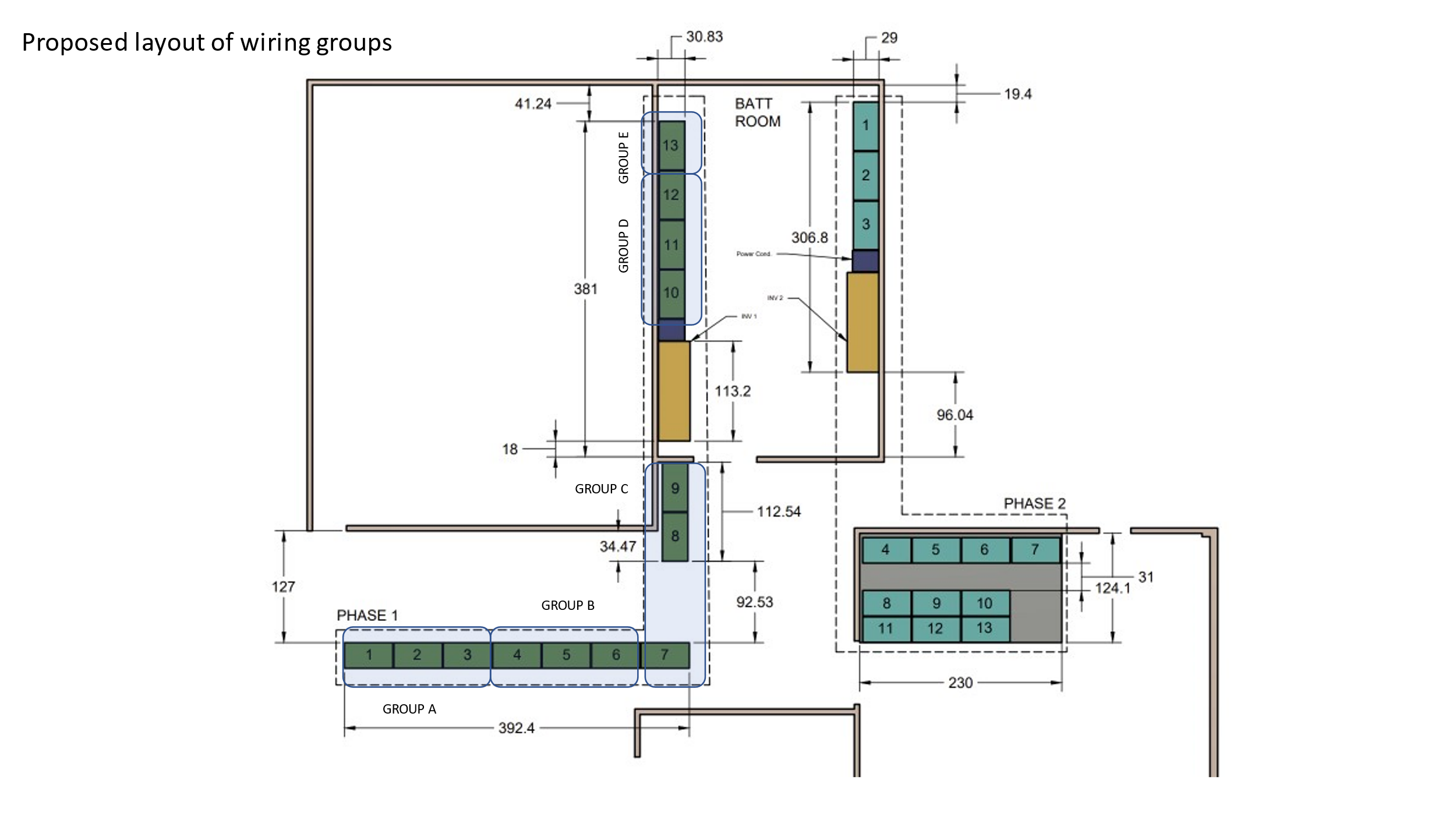
The change initiated by the SDSC team also improved the UPS capability as well – moving from just under 30 minutes of coverage with the prior solution to nearly 4 hours of coverage, which provides crucial time to properly manage disasters and unplanned outages.

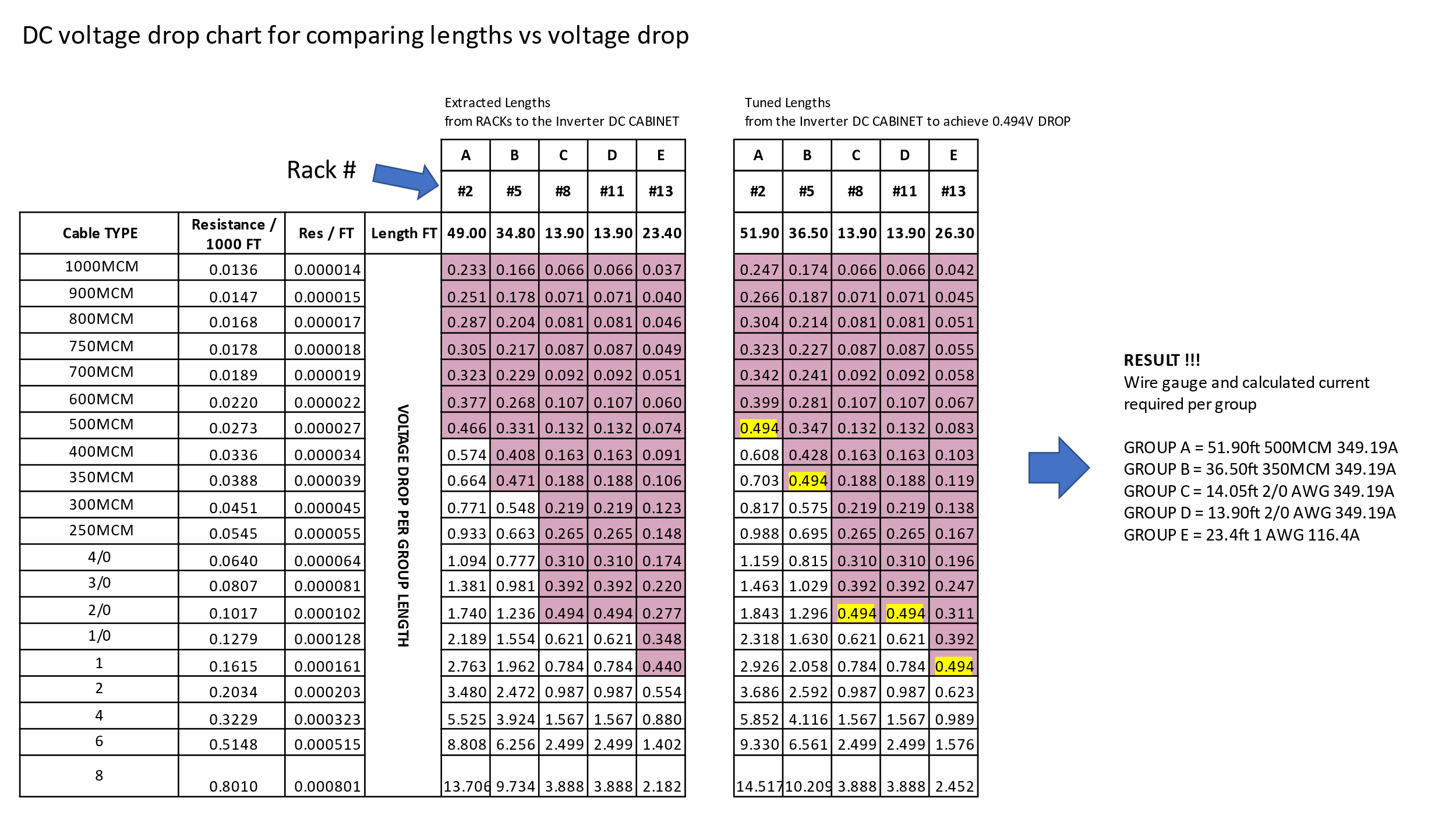
SDSC is expanding the installation in two additional phases. That in addition to adopting this technology, they have been outspoken in creating awareness of greener options for disaster recovery and IT resilience planning. Not only do traditional UPS’s encourage the consumption of lead-acid, but worse - the spent batteries are sometimes sent to other countries for disposal.

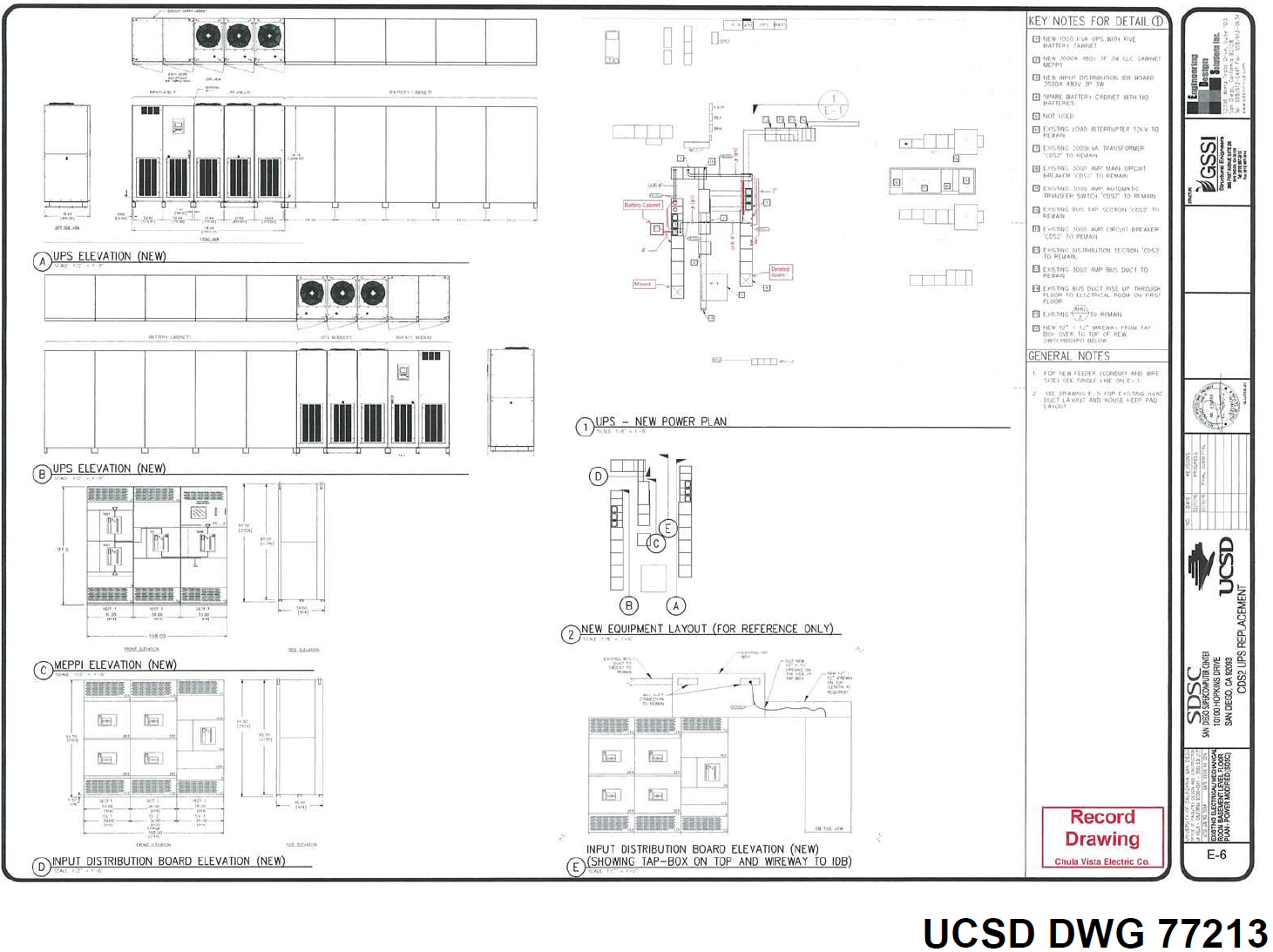
The team was comprised of designers, thinkers, and doers, with each team member providing critical contributions to the project’s success. The effort was complex and had to be done right the first time, as any failure could have caused potential downtime for the data center. The team not only accomplished this project, but also continues to work together to provide critical resources that support researchers, educators and administrators across UC San Diego and other UC campuses as well as national and global communities. From health information systems to scientific research projects, this team powers a large slice of the University mission.









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