

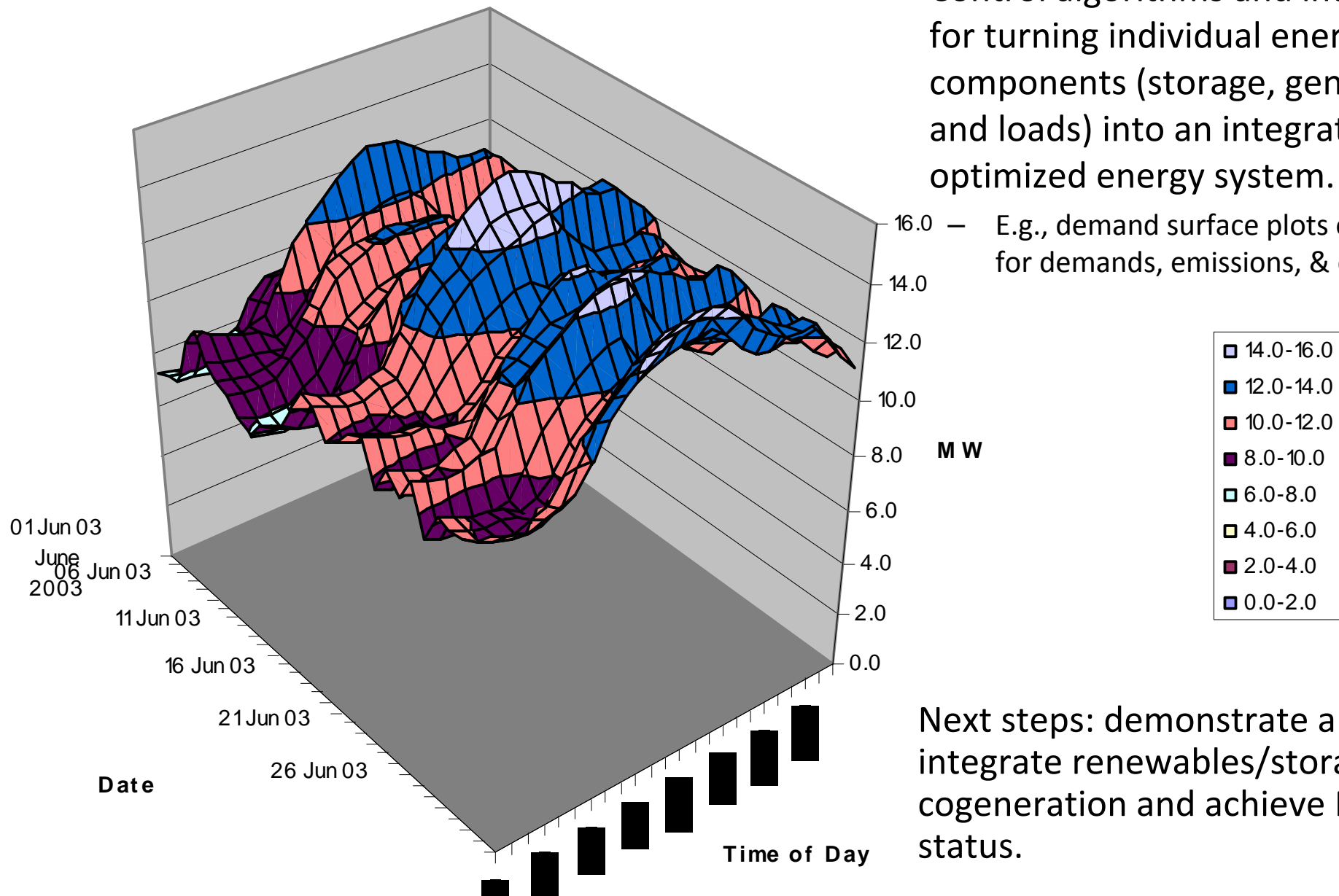
# Smart Grid U™

- Goal: transform the University of Minnesota's Twin Cities' campus into a *SmartGridU*.
  - Develop system models, algorithms and tools for successfully integrating the components (generation, storage and loads) within a microgrid on the University of Minnesota campus.
  - Conduct “wind-tunnel” data-driven simulation testing of smart grid designs, alternative architectures, and technology assessments, utilizing the University as a living laboratory.
  - Roadmap to achieve a “net zero smart grid” at the large-scale community level – i.e., a self contained, intelligent electricity infrastructure able to match renewable energy supply to the electricity demand.

# Smart Grid U™

- Control algorithms and interfaces for turning individual energy components (storage, generation and loads) into an integrated, optimized energy system.

— E.g., demand surface plots of raw data for demands, emissions, & efficiency



Next steps: demonstrate ability to integrate renewables/storage, cogeneration and achieve NZE status.

# Smart Grid U™

- Lessons learned and key messages:
  - Consider all parts together (Holistic Systems approach)
  - Focus on Benefits to Cost Payback
  - Remove deficiencies in foundations
  - The University as a Living laboratory
  - Education and Research → Implement new solutions