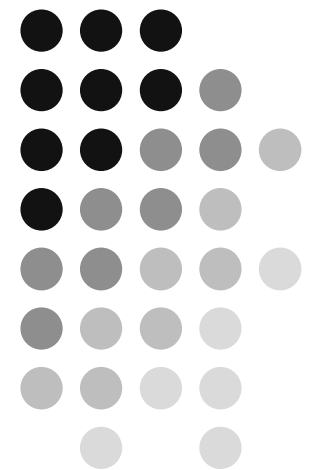
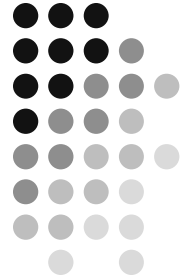


UCAR Computer Collocation Facilities Strategic Plan

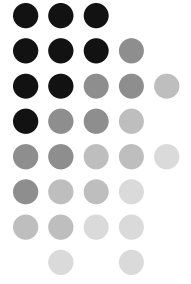
Presentation to the President's Council
Computing Facilities Planning Committee
December 20, 2006



CFPC Membership

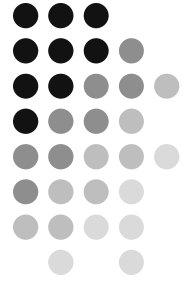


- Aaron Anderson
- Mike Daniels
- Ben Domenico
- Joanne Dunnebecke
- Peter Fox
- Marion Hammond
- Dave Patterson
- Karl Hudnut
- Jim VanDyke
- Pat Waukau – Chair
- Shawn Winkelman



Problem Statement

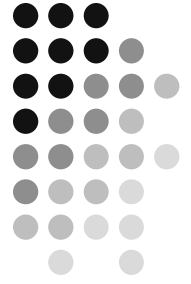
- Current and future requirements for dedicated computing facilities for divisions/programs throughout UCAR will exceed either local space, power, cooling, or structural integrity by the end of 2007.



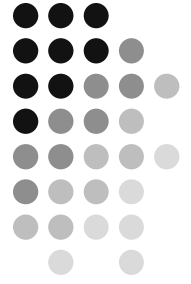
Mission

- At the request of the UCAR President's Council, the Information Technology Council (ITC) formed the Computing Facilities Planning Committee (CFPC) to develop a strategic plan to address UCAR's computer facility needs over the next ten to twenty years.

Strategic Goals

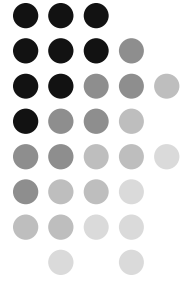


- Use available physical space to meet the growing need for dedicated computer facilities in a cost effective and efficient manner.
- Provide secure, managed, and environmentally-controlled computing facilities appropriate for divisions/programs.
- Provide clear, straightforward accountability and cost-allocation for the planning, use of, and management of computer facilities.



Constraints

- UCAR will not pursue new bond financing for capital investments until FY2009.
- Potential locations for computing facilities are CG-3 and ML-29 (CISL) at a time when CISL relocates to new facilities.



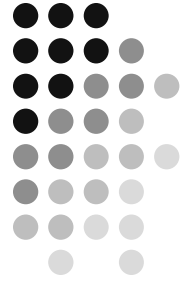
Guiding Principles

- Collocation vs. Centralization
- Economies of Scale/Cost Effective
- Equitable Cost Allocation/Cost Recovery
- Consistent Management
- Design for Extensibility

DCPC

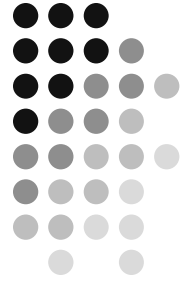
vs.

CFPC



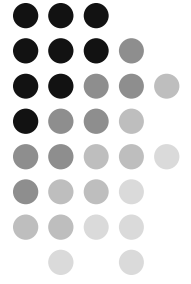
- Provide facility for geoscience community
- Partners/Complex governance model
- Community priorities would take precedence
- Production environment

- Facilities for innovative, experimental, interactive research
- Dedicated resources to respond to contractual requirements and divisional priorities



Scientific Requirements

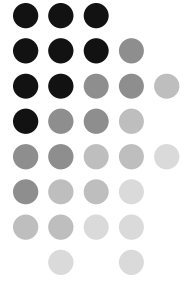
- Facilities for interactive/adaptable computational systems to explore cutting edge research
- Dedicated resources for integrative collaborations and real-time forecasting
- Secure environments for participating in sensitive projects
- Environments to house high availability systems
- Facilities that enable UCAR to remain competitive in pursuit of funding opportunities



Technical Requirements

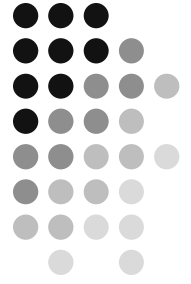
- Computer facilities that allow for space, utilities, and redundancy features typical of a Tier II facility
- Remote monitoring
- Adjacent flex-space for systems staff
- Access to suitable loading dock
- Restricted card access to essential personnel
- Appropriate software tools to efficiently track space, utility, and resource usage

Administrative

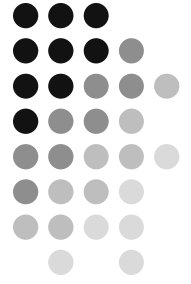


- Funding strategies to construct, support, maintain, and upgrade facilities.
- Governance/management model for equitable allocation of resources.
- Budgets sufficient for the day-to-day operations.
- Standards, policies, and procedures for use of collocation facilities.
- Cost allocation methodology process to apportion costs to UCAR divisions/programs.

Current Computing Facilities

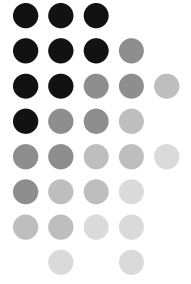


- Division/program space
 - 10 rooms (4,860 sq. ft.)
- Collocation spaces (4,500 sq. ft.)
 - FL0-0110 – Basic infrastructure
 - FL2-3095 – High Availability
 - CG2-2042 – High Availability
- There may be additional unofficial spaces
- Planned systems will fill all available space by end of 2007



Survey Results

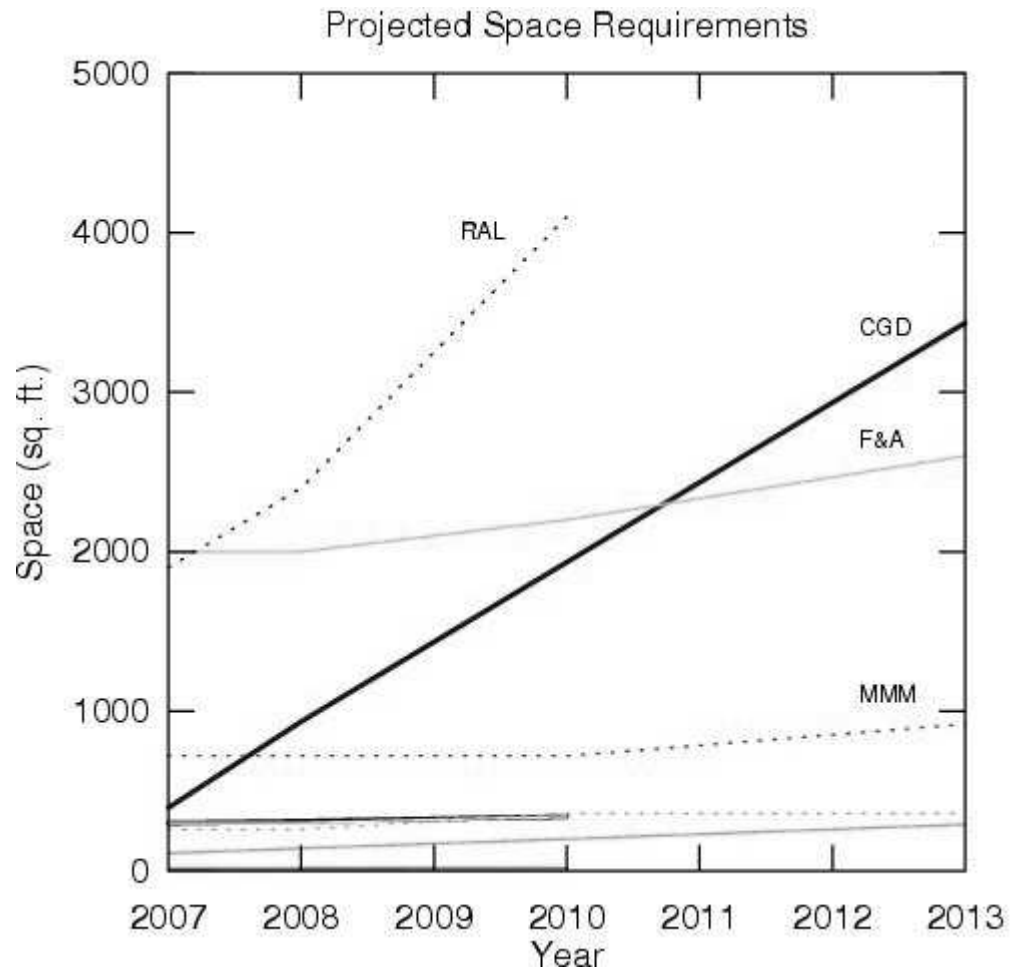
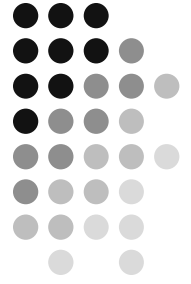
- 14 divisions/programs responded
- 65% have equipment in more than one room.
- Future planned purchases by division
 - Divisional Servers – 12
 - Data Storage Servers – 9
 - Small Cluster Systems – 7
 - Medium Cluster Systems – 3
 - Large Cluster Systems – 1

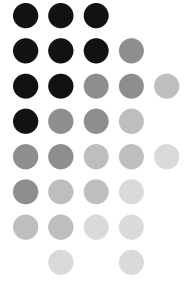


Survey Results

- Infrastructure Constraints:
 - Power – 70%
 - Cooling – 50%
 - Space – 35%
 - Business Continuity – 35%
 - Structural – 30%
- Most groups report constraints in at least two of these areas

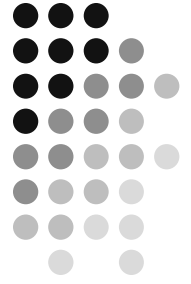
Survey Results





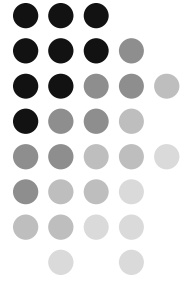
Recommendations

- Formalize the commitment as an organization to proceed in a new strategic direction for provisioning computer infrastructure.



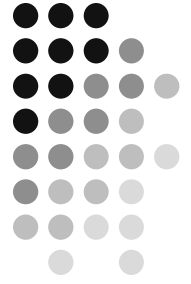
Recommendations

- Identify existing or create new entities to provide governance and management of current and future collocation facilities and provide appropriate funding strategies to support efficient management of facilities.



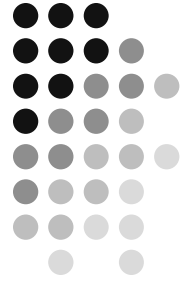
Governance

- Oversight body with representative cross-section of stakeholders.
 - Review and approve requests.
 - Arbitrate issues as needed.
 - Oversee long-term infrastructure and capacity needs.



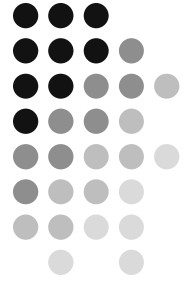
Management

- Designate entity to manage daily operations of all collocation facilities (1 FTE).
 - Communicate with facility occupants.
 - Coordinate moves, adds, changes
 - Ensure compliance with policies and procedures.



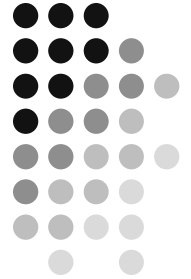
Recommendations

- Create an organizational process to inform the governing body about computer systems included in funding proposals and division strategic plans.



Recommendations

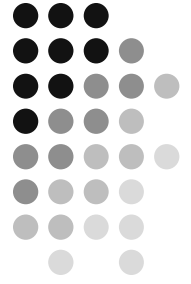
- Designate CG-3 and ML-29 as future computer collocation facilities.
- Allocate funds (\$50-75K) for a preliminary study of CG3.



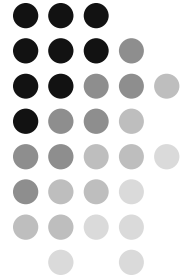
Recommendations

- Formalize the current cost allocation methodology being used for existing collocation facilities.

Cost Allocation Methodology

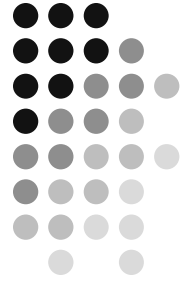


- Two cost categories
 - Infrastructure costs – construction and special equipment.
 - Charged based on % use of limiting capacity
 - Operating Costs
 - Actual costs for utility and ongoing maintenance costs



Recommendations

- Develop transition plans for migrating from divisional to collocation facilities.



Transition

- Develop phased transition to allow divisions/programs to adjust for budget impacts and normal computer upgrade cycles.
- Restrict future augmentation to existing division/program computer rooms.
- Determine sunset date for completion of transition.

Questions/Comments

