



MISSION STATEMENT

The High Performance Computing Center (HPCC) promotes research and teaching by integrating leading-edge high-performance computing for the faculty, staff, researchers, and students of Texas Tech University. The HPCC promotes excellence, diversity, and outreach in the HPC discipline.

VISION STATEMENT

To support Texas Tech strategic priorities, the HPCC envisions maintaining a set of computing, data storage, and data transfer resources that meets the needs of the widest possible variety of university community, supporting scholarship, academic progress, discovery, and classroom learning.

The HPCC will facilitate research and aid in educational advancement by supplying leading edge, high-performance computing equipment and training to the faculty, researchers, students, and staff of Texas Tech University. The Center will embrace disciplinary diversity by creating and supporting research partnerships leveraging our HPC infrastructure as well as national and international collaborations and is committed to ensuring that Texas Tech retains superior research computing capabilities.

The HPCC is committed to pursuing its mission according to the values of reliability, excellence, innovation, professionalism, integrity, efficiency, effectiveness, collaboration and teamwork.

Departmental Alignment With TTU Strategic Priorities		TTU Strategic Priorities		
		1	2	3
High Performance Computing Center – Priorities				
Priority 1	Support and Enable Research at Texas Tech that Requires HPC.	X	X	X
Critical Success Factors	<ul style="list-style-type: none"> Deploy capabilities that meet the needs of advanced researchers in academic High-Performance Computing. Implement and maintain computing capabilities with the goal to remain in the upper third of academic institutions in the TOP 500 list. Maintain a range of modern equipment, software, utilities, and tools consistent with the state of the art in High-Performance Computing. 			

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High Performance Computing Center – Priorities				
Objective 1.1	Maintain a premier HPC facility that is roughly (1/20) of the capabilities national class facilities deployed with similar tools.	X	X	X
Strategies	<ul style="list-style-type: none"> • Leverage strategic partnerships with hardware and software vendors in obtaining maximum value in HPC infrastructure purchases and support. • Continue cluster updates and expansion. • Continue to promote purchase of shared resources like Community Clusters and Researcher Storage. • Develop partnerships with other institutions to obtain additional HPC cycles. 			
Assessments	<ul style="list-style-type: none"> - Computation Capacity <ul style="list-style-type: none"> ○ Number of Cores ○ Number of Nodes ○ Total TeraFLOPS - Storage Capacity <ul style="list-style-type: none"> ○ Size of storage in PB ○ Scratch space purge frequency ○ Scratch space purge amount ○ Average age of files on Scratch - Hours cluster is up and available for use - Hours cluster is unavailable due to unscheduled downtime 			
Objective 1.2	Encourage our top researchers to make use of national class HPC and research computing facilities.		X	
Strategies	<ul style="list-style-type: none"> • Interact closely with researchers on campus. • Help facilitate code migration to National Class facilities. • Encourage usage of National and Regional Grid computing. 			
Assessments	<ul style="list-style-type: none"> - Grants attributable to HPCC-supported researchers - CPU Provided (Lonestar) - Number of Researchers migrating to regional and national facilities. 			
Objective 1.3	Communicate and demonstrate to researchers advanced HPC technologies.		X	
Strategies	<ul style="list-style-type: none"> • Attend conferences and workshops demonstrating newest technologies. • Train users in newest technologies methods and techniques. • Publish articles and papers with researchers to facilitate research and learning new technologies. 			
Assessments	<ul style="list-style-type: none"> - Person contact hours - HPC educational events (Training sessions, Events and Tours) 			
Priority 2	Facilitate Expansion of Funding for TTU Researchers		X	

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Critical Success Factors	<ul style="list-style-type: none"> Continue to grow the total dollar value, scale, and variety of supported research grants. Maintain expenditures on high performance and research computing at a level that provides a several-to-one return on investment for the university, consistent with past years and expected future needs. 			
Objective 2.1	Promote both disciplinary and interdisciplinary research that leads to extramural funding.		X	
Strategies	<ul style="list-style-type: none"> Leverage involvement in multi-university collaborative projects like HiPCAT, SURA, LEARN, and XSEDE to expand efficiency in delivery of operations and enhance the University’s opportunities for collaborations on funding. Encourage faculty to build and make use of collaborations to enhance the quality of their research and the training of their students. Add value to faculty funding proposals by contributing to the preparation of their proposals. Collaborate as necessary with faculty to support, enhance, and extend their research efforts, including involvement in these efforts where needed. Pursue corporate partnerships that lead to new research topics and funding opportunities. 			
Assessments	<ul style="list-style-type: none"> Grants attributable to HPCC-supported researchers Funding involving HPCC staff support Multi-organization collaboration and resource sharing arrangements 			
Objective 2.2	Increase awareness of the use and availability of HPC technologies to researchers on campus.		X	
Strategies	<ul style="list-style-type: none"> Conduct HPC workshops, seminars and training events. Sponsor conferences for the benefit of faculty, students and researchers. Aid in the preparation of grants that require high-performance computing or high-performance visualization. Invite outside speakers on high-performance and grid computing to increase the knowledge base of HPCC personally and TTU researchers. 			
Assessments	<ul style="list-style-type: none"> Number of valid accounts Number of active accounts Person contact hours HPC educational events (Training sessions, Events and Tours) 			
Priority 3	Personnel: Recruit and retain high-caliber personnel	X	X	X
Critical Success Factors	<ul style="list-style-type: none"> Maintain a low attrition rate. Maintain a diversity of highly skilled staff in the scientific computing areas. Expand staff size to 15 FTE 			

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Objective 3.1	Encourage the use of best personnel practices	X	X	X
Strategies	<ul style="list-style-type: none"> Encourage qualified staff within the department to attend professional meetings and share the knowledge gained with faculty, staff, and students. Maintain state-of-the-art resources. Maintain competitive salary, benefits, and opportunities vis-à-vis peers. Conduct exit interviews to assess retention and recruitment Conduct non-periodic reviews with employees to measure satisfaction. Encourage and provide opportunities for training and continuing education. 			
Assessments	<ul style="list-style-type: none"> Staff retention and recruitment Total FTE 			
Objective 3.2	Encourage use of the best technologies	X	X	X
Strategies	<ul style="list-style-type: none"> Encourage multidisciplinary projects Increase capabilities of staff to deliver user services through cross training and skill sets sharing. Increase overlapping capabilities of staff to broaden delivery of user services through formal training opportunities offered by vendors (i.e. Lustre training, UGE training) Bring in outside speakers on high-performance computing and visualization to increase knowledge base of HPCC personnel. Create a knowledge database to retain information about solutions to user issues. 			
Assessments	<ul style="list-style-type: none"> Staff contact hours 			
Priority 4	Improve our outreach efforts and promote diversity	X	X	X
Critical Success Factors	<ul style="list-style-type: none"> Increase K-12, undergraduate, and minority activity in HPC education and outreach. 			
Objective 4.1	Leverage TTU efforts to promote K-12 and undergraduate research in areas requiring HPC.	X	X	X
Strategies	<ul style="list-style-type: none"> Teach courses in parallel and scientific computing. Collaborate with diversity initiatives at TTU (e.g. MentorTech, LHFSA, Indian Student Association, Cross Cultural Academic Center, Center for Undergraduate Research, IDEAL and the Honors College) emphasizing the importance of HPC to research. 			

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	<ul style="list-style-type: none"> Sponsor internal conferences for the benefit of faculty and students. Promote HPC to Minority Serving Institutions (MSI) through workshops and lectures. 			
Assessments	<ul style="list-style-type: none"> Number of sponsored and/or educational events Number of undergraduate courses supported 			
Objective 4.2	Promote scientific exchange with commercial entities		X	X
Strategies	<ul style="list-style-type: none"> Partner with companies in grant preparation 			
Assessments	<ul style="list-style-type: none"> Number of projects with commercial partners Support of academic industry/university cooperative projects 			
Priority 5	Support and Encourage HPC Workforce Development	X	X	
Critical Success Factors	<ul style="list-style-type: none"> Train students, faculty, and staff to use HPC resources. Lead workshops to train users to better use their HPC applications. 			
Objective 5.1	Leverage institutional expertise in science and computing to create training programs in HPC	X		
Strategies	<ul style="list-style-type: none"> Offer faculty development workshops and services to enhance faculty teaching, research, and outreach capabilities. 			
Assessments	<ul style="list-style-type: none"> Number of academic courses supported HPC educational events (Training sessions and Events) 			
Objective 4.2	Coordinate training courses and programs to highlight scientific and technological breakthroughs through HPC.	X	X	
Strategies	<ul style="list-style-type: none"> Strengthen Academic Quality and Reputation by developing training programs in HPC for faculty and students. 			
Assessments	<ul style="list-style-type: none"> Participation in short-term training classes offered 			