



University of Toronto

REAL ESTATE OPERATIONS

TO: Business Board

SPONSOR: Nadeem Shabbar, Chief Real Estate Officer

CONTACT INFO: 416-978-4322 or email: nadeem.shabbar@utoronto.ca

DATE: November 1, 2007 for November 19, 2007

AGENDA ITEM: 4 (d)

ITEM IDENTIFICATION:

Capital Project Report – SciNet High Performance Computing (HPC)

JURISDICTIONAL INFORMATION:

Pursuant to Section 5.2. (b) of its Terms of Reference, the Business Board approves expenditures for, and the execution of, approved Capital Projects.

PREVIOUS ACTION TAKEN:

This is the first time this project is being presented to the Business Board. Other Board and Committee approval to date include:

- Planning and Budget Committee October 24, 2007

HIGHLIGHTS:

The newly named “SciNet” system is a continuation of the Physical Sciences Computing NETWORK (PSciNet) established by a group of researchers from the Canadian Institute for Theoretical Astrophysics, the Department of Chemistry and the Department of Physics created in 1999. Three computers were acquired each designed to serve the needs of the original participants. As additional funding became available from the Canadian Foundation for Innovation (CFI) in 2003 this allowed for the purchase of two new cluster systems as well as an upgrade to the existing vector system. SciNet (HPC) was the collaboration of additional researchers from the Department of Physics, the University of Toronto Institute for Aerospace Studies, the Department of Mechanical and Industrial Engineering and researchers from computational biology, genomics and bioinformatics.

The proposed new SciNet system will provide significant computing capabilities and will provide an integrated resource to be used by the Faculty of Medicine and affiliated teaching/research hospitals, the Faculty of Applied Science and Engineering, the Faculty of Arts & Science and UTSC. It will also allow researchers in Ontario via Optical Advanced Network of Ontario (ORANO) and researchers across Canada via the CANARIE-financed

HIGHLIGHTS (cont'd)

national network CANet 4 to access information. SciNet is expected to be the most powerful academic HPC facility in Canada.

Due to the space and power requirements to accommodate the computer hardware, infrastructure and the required 3MW of electrical power needed to operate the HPC hardware and cooling equipment there were no sites available on the St George Campus. Consequently, the University has secured 1,100 square meters of net rental space at 7700 Keele Street. Leasing provides flexibility and the lease term is co-terminus with project funding. The hardware will be located at 7700 Keele Street but the administrative and technical operations will be located at 256 McCaul Street. The 256 McCaul facility will consist of an AccessGrid room which will connect SciNet with all other Compute Canada consortia and administration offices to be located on the second floor at 256 McCaul Street. This location will enable remote conferencing and collaboration between the researchers on the St George Campus and other researchers across the campuses and other institutions.

The project scope is to construct leasehold improvements at the 7700 Keele Street facility and 256 McCaul Street locations. Completion date for the SciNet High Performance Computing (HPC) is targeted for September 2008.

FINANCIAL AND/OR PLANNING IMPLICATIONS:

The Total Project Cost for the renovations at 7700 Keele Street and 256 McCaul Street for the SciNet High Performance Computing Project are estimated to be \$5,882,590. Funding for the overall SciNet HPC project is to be provided by the \$32.5 million identified for capital expenditures from CFI, the Ontario Government and the University of Toronto. No borrowing is required as participating divisions will cover any shortfall in funding. The estimated \$32.5 million cost of the overall project will be allocated as follows:

7700 Keele Street renovations	\$ 4,771,970
256 McCaul Street renovations	\$ 1,110,620
Purchase of equipment	<u>\$26,617,410</u>
Total Cost	\$32,500,000

The funding \$5,882,890 for the renovations is to be provided by the University of Toronto in the amount of \$2,850,000, the Canadian Foundation for Innovation (CFI) in the amount of \$1,516,295 and the Ontario Government in the amount of \$1,516,295. The operating costs associated with the SciNet project are projected for the 5 (five) year term to be \$7,890,360 at 7700 Keele Street and \$465,810 for 256 McCaul Street. The Keele Street operating costs are high due to utility costs which represent 75% of the total costs.

RISKS:

Environmental condition for 7700 Keele Street location
Sourcing Design/Built vendors to meet the unique requirements of the site

RECOMMENDATION:

Be it resolved

Subject to Governing Council approval of the project,

THAT the Vice-President, Business Affairs be authorized to execute the SciNet High Performance Computing (HPC) renovations at the University of Toronto at a total project cost not to exceed \$ 5,882,590 with sources of funding as follows:

- University of Toronto \$2,850,000
 - Faculty of Arts & Science \$1,800,000
 - Faculty of Medicine \$ 450,000
 - Faculty of AS & E \$ 450,000
 - UTSC \$ 150,000

- Canada Foundation for Innovation(CFI) \$1,516,295

- Province of Ontario \$1,516,295

*For more details on the project please visit:

<http://www.governingcouncil.utoronto.ca/Assets/Boards+and+Committees/Planning+and+Budget+Committee/2007+-+2008+Academic+Year/a1024.pdf>

**7700 Keele Street
HPC Centre Space/Utility Costs**

DESCRIPTION		Sq FT	COST	Cost/Sq FT
RENT CALCULATIONS				
Net rent		12,239	\$ 220,320	\$ 18.00
GST applicable to net rent 1.98%			\$ 4,362	
Rent incl gst			\$ 224,682	
Subtotal Rent 5 years			\$ 1,123,411	
Operating/maint costs/taxes			\$ 48,960	\$ 4.00
Year 2			\$ 49,939	
Year 3			\$ 50,918	
Year 4			\$ 51,897	
Year 5			\$ 52,999	
Subtotal gross rent			\$ 1,378,124	
OPERATIONAL EXPENSES				
Penalty rate post 5 years			\$ 60,000	
Telephones	400/m+tx		\$ 24,500	
Security System & monitoring	2,500/y		\$ 12,500	
Utility expenses: Fibre 10 G	20,800/m+		\$ 1,407,150	
Dedicated gigabit separate	5 years		\$ 214,800	
Back-up 5Mbps ADSL Line	200/m+tx+		\$ 27,900	
Utility expenses: hydro yr1			\$ 353,044	
yr2			\$ 958,436	
yr3			\$ 1,423,261	
yr4			\$ 1,572,166	
yr5			\$ 1,603,609	
Subtotal hydro			\$ 5,910,516	\$ 96.58
Utility expenses: water for 5 yrs	\$5,000/y		\$ 25,000	
Mechanical service contracts	\$6,000/y		\$ 30,000	
Subtotal			\$ 7,712,366	
Contingency for above	1%		\$ 78,000	
Total Expenses 5 years			\$ 7,790,366	\$ 127.30
Average rent & expenses/year			\$1,853,698/y	\$ 151.46

*Variable at each year(build-in an escalation cost of 2% per subsequent years).

Realty taxes at \$1.50 per square foot are included in the rent to be reimbursed upon exemption.

**256 McCaul Street
Main Offices Operational Costs**

OPERATIONAL EXPENSES		GSF	COST	Cost/Sq FT
Space costs for 254/256 McCaul Street				
Including heat/hydro/cooling/cleaning		3788	\$ 317,370	\$ 16.76
Telephones	\$1,800/m+tx		\$ 118,800	
Security Systems & monitoring	2,500/y		\$ 12,500	
Utility expenses: fibre	10,000		\$ 10,000	
Utility expenses: CNS	7,000/oto		\$ 7,139	
Total Expenses 5 years			\$ 465,809	\$ 24.59