

Massachusetts Green High Performance Computing Center Initiative

Overview

- 90,000 sq. ft. data-center Holyoke, MA. Core/shell - 680 racks, 10MW compute, 15MW total. Initially: 388 racks, 5.9MW compute, 9.4 MW total. 10 year commitment - BU, Harvard, MIT, NEU, UMass. Online 2013.
- ~\$95M budget. Development \$9.6M; Construction \$60.7M; Other \$11.4M; Contingency \$13.9M.
- Target Funding: \$50M -5 univs; \$25M – State of MA, \$5M – EMC/Cisco, ~\$15M -New Market Tax Credits.
- FAS Research Computing - initial user of Harvard portion.
- Harvard representatives:
 - MGHPCC Board: Katie Lapp, Anne Margulies; Executive Committee: Anne Margulies
 - IT - James Cuff, Gerry Lotto (FAS Research Computing), Leo Donnelly (HUIT)
Business - Eric D’Souza (HUIT), Matt Tobin (FAS), Julie Faber (OGC), Matt Gruber, Devin Advani (VPF)
Facilities - David Sullivan (HUIT), Lester Gerry (HPPM)
Sustainability - Andrea Trimble, Kevin Bright (VPCS)
Communications/Public Affairs - Kevin Casey (HPAC)

Plan to consolidate and move (it will essentially be refresh with new equipment at a MGHPCC) Harvard Faculty of Arts and Science (FAS) RC IT equipment from 7+ locations on-campus and the commercial co-lo at 1 Summer Street, Boston will achieve the following major benefits:

1. Real power/energy savings: ~1MW of IT load that will be moved to MGHPCC, Holyoke currently requires about 1MW of cooling (we estimate an average PUE=2.0 across multiple machine rooms on campus) because of the inefficient data-center/machines rooms. The realized PUE of MGHPCC in Holyoke will be about 1.5 (maybe as low as 1.3) so what required 2MW of power will require 1.3-1.5MW when migrated/consolidated to MGHPCC – this has real, on-going \$ savings (lower energy), green benefits, and frees up power capacity on-campus, for future campus growth/demands. Additionally the cost of energy in Holyoke is lower than it is on campus (Boston/Cambridge).
2. This consolidation process space also frees up space/real-estate on-campus (some in prime locations) for potential re-use by academic and administrative programs. Admittedly a mixed bag - some of the machines rooms are below grade and might only suffice for re-use as storage; however, some can be re-used for office space. This is a major benefit given the \$ cost of building or leasing (or even finding!) new programmatic space, and the challenge of finding such space within core campus locations.
3. Reducing from many small data-centers to 1-2 locations increases operational efficiencies in managing the data-centers (facilities/data-center staff do not have to run around multiple locations).
4. Freeing up ~200kW of IT load in 60 Oxford Street provides increased capacity for growth of low-density administrative compute on-campus. (as 60 Oxford Street is close to/at capacity today). This assumes the 100kw of IT load (“Research Computing crown jewels”) that needs high levels of redundancy stays at 1 Summer Street.