

Summary of baseline FOMs	
LSMS	3.389E+00
QBOX	5.309E+09
NEKbone	1.583E+09
HACC	1.06E+09
CAM-SE	4.443E-01
UMT2013	2.580E+11
AMG2013	4.495E+10
MCB	3.23E+10
QMCPACK	2.286E+05
NAMD	1.54975
LULESH	1.118E+07
SNAP	220.5460721
miniFE	1.16E+07

FOMs in **RED** are the value that will be used as the baseline value from which projections should be made.

Additional FOMs (in black) are provided as additional scaling information for the benefit of the Offeror

Benchmark	Baseline platform	Compiler version / runtime	Compiler options	Other environmental # options	# MPI nodes	# MPI tasks	Threads/t ask	FOM
LSMS	Cray XK7	gcc			18561	18561	16	3.389E+00
QBOX	BlueGene/Q	mpixlcxx_r 12.1	-O3 -qarch=qp		98304	196608	32	5.309E+09
mgo7936 (7936 atom MgO system)	STRONG SCALING RESULTS				32768	65536	32	3.325E+09
set nrowmax 2048,					16384	32768	32	2.831E+09
set matrix_loc 256 32					8192	16384	32	1.724E+09
Note: The way the qbox FOM is calculated was changed on 11/12/13, and the baseline values here were scaled by N^3 (N=7936)					4096	8192	32	8.751E+08
					2048	4096	32	5.013E+08
					32768	131072	16	4.035E+09
					16384	65536	16	2.726E+09
					8192	32768	16	1.995E+09
					4096	16384	16	1.099E+09
					2048	8192	16	6.250E+08
NEKbone	Blue Gene/Q	xlc 12.1.0.4, xlf 14.1.0.4	-O3 -qhot -qrealsize=8 -qdpc=e -qsuffix=cpp=f -WF,-DPTRSIZE8 -WF,-DMPI -WF,-DLONGINT8 -WF,-DGLOBAL_LONG_LONG		98304	3145728	2	1.583E+09
Note:					49152	49152	64	8.637E+08
					32768	32768	64	6.069E+08
					16384	16384	64	2.911E+08
					8192	8192	64	1.505E+08
					4096	4096	64	7.392E+07
					2048	2048	64	3.688E+07
					1024	1024	64	1.894E+07

					512	512	64	9.4882E+06	
HACC	Blue Gene/Q	xlc 12.0.0.3 / OPM	-O3 -qhot=level=1 - qsmpr=omp:noauto		98304	1572864	4	1.06E+09	
					49152	786432	4	5.14E+08	
					24576	393216	4	2.94E+08	
					8192	32768	16	8.79E+07	
					2048	32768	4	2.50E+07	
					512	4096	8	6.95E+06	
CAM-SE	Blue Gene/Q	mpixlf2003	-O3, qarch=qp, -qtune=qp		8192	131072	1	6.585E-01	
Note: no hardware threading used on BG/Q; one MPI task/core					4096	65536	1	4.443E-01	
					2048	32768	1	2.320E-01	
					1024	16384	1	1.200E-01	
UMT2013	BlueGene/Q				4096	32768	8	2.580E+11	
					2048	16384	8	1.420E+11	
					1024	8192	8	7.060E+10	
AMG2013	BlueGene/Q	xlc_r V12.0 / LOMP beta	-O2		12	4096	65538	4	4.495E+10
					12	4096	32768	8	3.780E+10
					12	4096	16384	16	3.338E+10
					13	4096	8162	32	3.338E+10
			Number of iterations to solution ->		13	4096	4096	64	2.612E+10
					11	512	8192	4	5.670E+09
					12	512	4096	8	4.912E+09
					12	512	2048	16	4.775E+09
					12	512	1024	32	4.217E+09
					12	512	512	64	3.416E+09
MCB	BG/Q	xlc 12.1	-O3 -Q64 -qhot	used the "_lo" moab scripts	4096	8192	32	3.23E+10	
					256	4096	4	2.75E+09	
					512	8192	4	5.42E+09	
					1024	16384	4	1.10E+10	
					2048	8192	16	1.67E+10	
					4096	16384	16	3.23E+10	
					8192	16384	32	7.09E+10	
QMCPACK	Cray XK7	gcc/CUDA		GPU-enabled	64	64	1	18392.11	
					128	128	1	36447.8	
					256	256	1	72222.49	
					512	512	1	142055.61	
					780	780	1	2.286E+05	
					1024	1024	1	271936.67	
					2048	2048	1	552604.11	
					4096	4096	1	1090290.37	
					8192	8192	1	2131918.8	
	Cray XK7	gcc			512	1024	8	48864.71	
					1024	2048	8	97141.99	

				2048	4096	8	193246.48
				4096	8192	8	382542.95
				8192	16384	8	754599.76
NAMD	Blue Gene/Q	xiC 12.1.0.1 / pthreads	-O3 -qhot				
3M atoms				512	512	64	4.35415
20M atoms				1024	1024	64	2.32096
100M atoms				1024	1024	64	0.489627
				2048	2048	64	0.869936
				4096	4096	64	1.54975
				8192	8192	64	2.75435
				16384	16384	64	3.70067
				32768	32768	64	4.80695
LULESH	BlueGene/Q	xiC 12.0.0.3 / LOMP	-O5	4096	32768	8	1.118E+07
				2048	15625	8	5.303E+06
				1024	8000	8	2.705E+06
				512	4096	8	1.391E+06
				256	1728	8	5.979E+05
				128	1000	8	3.558E+05
				64	512	8	1.817E+05
				32	216	8	7.862E+04
SNAP	BlueGene/Q	xiC 12.1	-O3	4096	65536	4	220.546072
				2048	32768	4	131.255989
				1024	16384	4	74.5990302
				512	8192	4	40.3388463
				256	4096	4	20.1690164
				128	2048	4	10.9756231
				64	1024	4	5.71689915
				32	512	4	2.84543592
				16	256	4	1.49884589
				8	128	4	0.78070107
				4	64	4	0.38412784
				2	32	4	0.20188969
miniFE	BlueGene/Q	mpixlcxx_r v12.1	"-g -O3 -qomp=omp"	4096	65536	1	1.16E+07
				4096	57344	1	9.60E+06
				4096	49152	1	8.18E+06
				4096	40960	1	6.87E+06
				2048	32768	1	5.82E+06
				2048	24576	1	4.15E+06
				1024	16384	1	2.93E+06
				1024	8192	1	1.41E+06
				1024	4096	1	712856

	1024	2048	1	353293
	1024	1024	1	175546