1. Benchmarking for Community Earth System Model (CESM) v1.2.0

- The vendor should demonstrate that the cluster system to be supplied is capable of carrying out simulations with the CESM v 1.2.0 model, available from <http://www.cesm.ucar.edu/models/cesm2.0/>. The source code can be downloaded from this link, and alternatively, can be provided from the PI on request.

- On a Linux HPC that 2.6-GHz Intel Xeon E5-2670 (Sandy Bridge) processors, this model, set with a global resolution of 4º*5º with 30 vertical levels, takes a wall clock time of 140 minutes for simulation of 1 year. The number of processors used for this purpose is 96 on the machine referenced above. We expect the benchmark statistics similar to the above, of course in proportion with the processor specs.

- To be brief, after downloading the code, in the parent directory, invoke the following command to create a new "case" (experiment), which meets the benchmark specs.
  ./create_newcase -case casename -res f45_g37 -compset B1850CN -mach userdefined

- Then, follow the instructions from the user guide available in the link <http://www.cesm.ucar.edu/models/cesm1.2/cesm/doc/usersguide/book1.html> for setting up and running the case.

- The input data will be automatically downloaded by invoking the command ./check_inputdata, in the directory where the case is created, while building a case.

2. Benchmarking for the Weather and Forecasting (WRF) Model

- The vendor should demonstrate that the system to be supplied is capable of carrying out simulations with the WRF model, available from <http://www2.mmm.ucar.edu/wrf/users/download/get_sources.html#WPS>.
- On a Linux HPC that 2.6-GHz Intel Xeon E5-2670 (Sandy Bridge) processors, the WRF model version 3.6 with a horizontal resolution of 27 km and 19 vertical levels over the domain 10S-30N, 60E-100E, with default configuration downloadable from <http://www2.mmm.ucar.edu/wrf/users/download/get_sources.html#WPS>, takes a wall clock time of 58 seconds for simulation of 1 day. The number of cores used for this purpose is 4 on the

machine referenced above. We expect the benchmark statistics similar to the above, of course in proportion with the processor specs.

- Alternatively, a benchmarking page for WRF model is available: <http://www2.mmm.ucar.edu/wrf/WG2/benchv3/>, provided by the providers of the model.

The vendors should successfully meet the benchmarking criteria mentioned.