Costing Guidelines - Spares

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ASICs

Two rounds of NRE are allowed for all ASICs. Both rounds are included in total costs, but only the first round is counted in the CORE costing. Sufficient ASIC devices are required to populate all boards including spare and test boards, plus 25% spares. If the manufacturer does not provide tested parts, a further allowance must be made for manufacturing yield.

All ASICs are tested on receipt. A test board is required for each ASIC type.

MCMs

Two rounds of NRE are allowed, as for ASICs. 25% of spare fully-assembled MCMs must be provided. To allow for MCM manufacturing yield, 20% of spare substrates and commercial dies, and 25% of spare ASIC dies, are ordered, i.e.

Total number of MCMs required on all boards	**N**
Number of MCMs built and tested	**1.25 * N**
Number of Substrates and commercial dies required	**1.25 * 1.2 * N**
Number of ASIC dies required	**1.25 * 1.25 * N**

All MCMs are tested on receipt, using a separate test board.

Connectors and cables

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Modules.

Sufficient production modules are built to equip the running trigger system, plus 10% spare modules (rounded up to the next whole number). Where the number of modules is small, a minimum of 4 spares is required

Crates and Backplanes.

For each type of crate, fully assembled and tested crates including backplanes are provided to equip the running experiment, plus one working spare at the experiment, plus crates required for module debugging and testing at the experiment and in home institutes when the experiment is running.

Power Supplies

Unless provided in a common pool within ATLAS, a minimum of 4 spares of each type of power supply is needed.

Number of Iterations.

The costing assumes the following numbers of iterations:

ASICs and MCMs	2
Test Boards	1
Backplanes	2
Modules	3