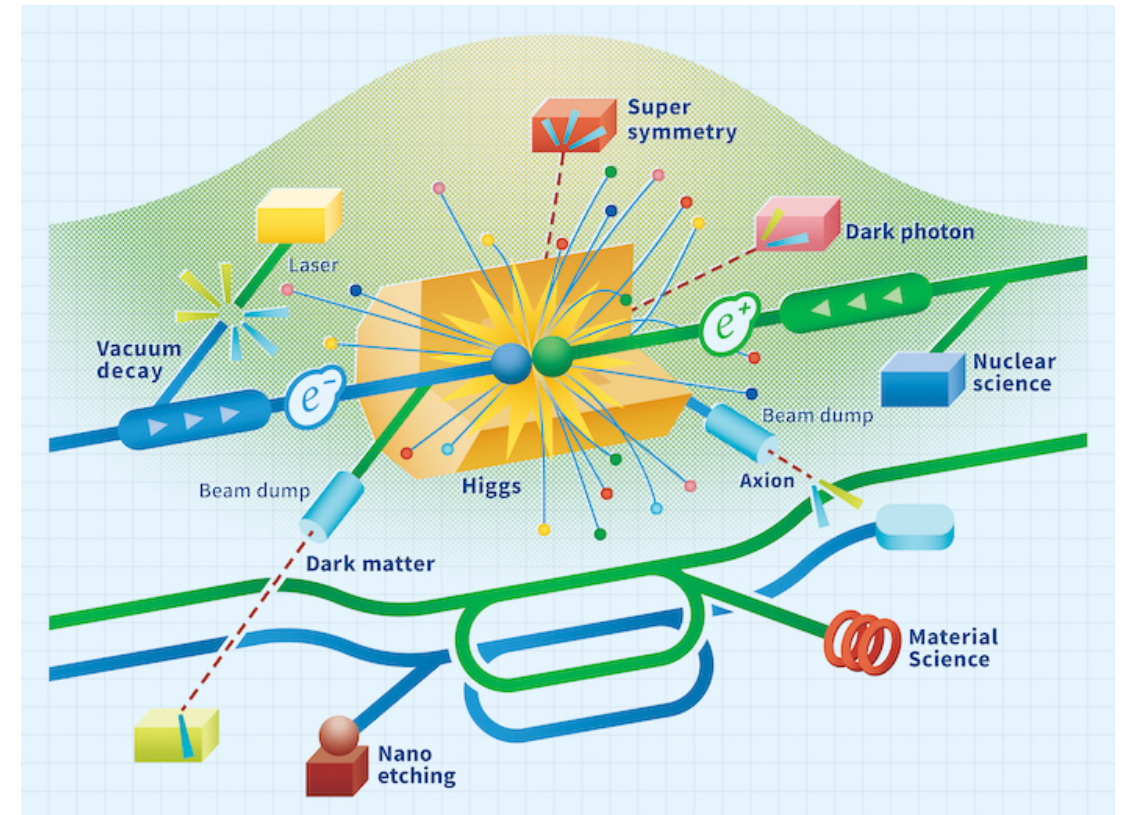


A Linear Collider Facility for CERN

LC Vision Coordination Group Meeting
Feb 11, 2025

J. List for the LCVision Editorial Board



The Linear Collider Facility at CERN

Baseline

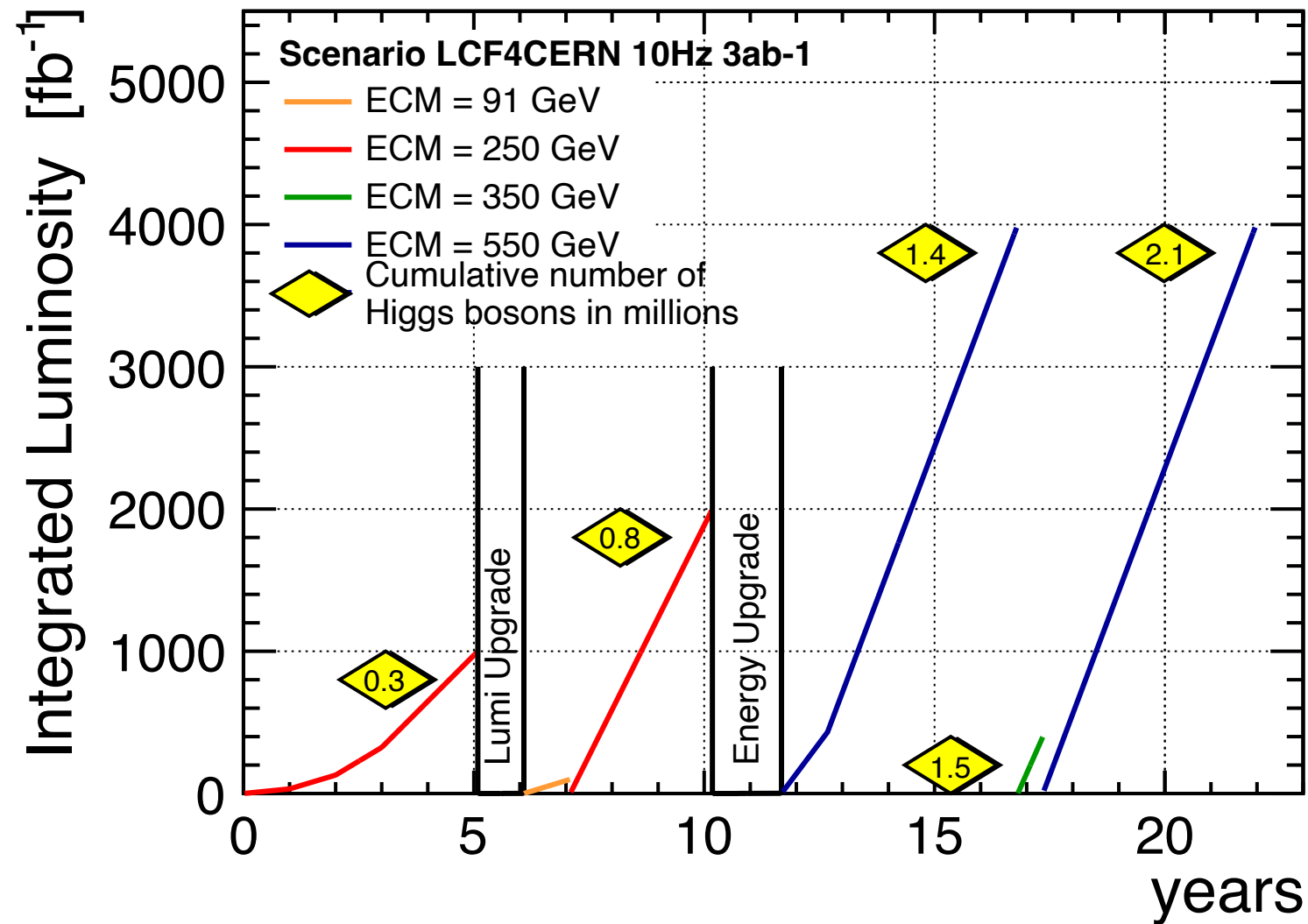
- 33 km facility
- 2 interaction regions
- initially: SCRF with 31.5 MV/m, $Q_0=2E10$
 - a) 250 GeV, $2.7E34/\text{cm}^2/\text{s}$ => somewhat less than 8 BCHF
 - b) 250 GeV, $5.4E34/\text{cm}^2/\text{s}$ => a little more than 8 BCHF
 - c) 550 GeV, $7.2E34/\text{cm}^2/\text{s}$ => approx. 12 BCHF
- physics optimised run plan with ILC-like polarisation assumptions
 - 3 ab-1 @ 250 GeV: Higgs, WW, $f\bar{f}$
 - 100-200 fb-1 @ 91 GeV: Z
 - **8 ab-1 @ 550 GeV: boosted top, Higgs in WW fusion, di-Higgs, $t\bar{t}H$, VBS, searches, ...**
 - 200-400 fb-1 @ 350 GeV: mainly for $t\bar{t}$ threshold scan
 - add 1.5 TeV / 3 TeV CLIC program as proxy also for other options... ?

All cost values preliminary, to give you a rough idea. EPPSU submission will contain more precise costings (wip), for one baseline, a), and “deltas” for various options



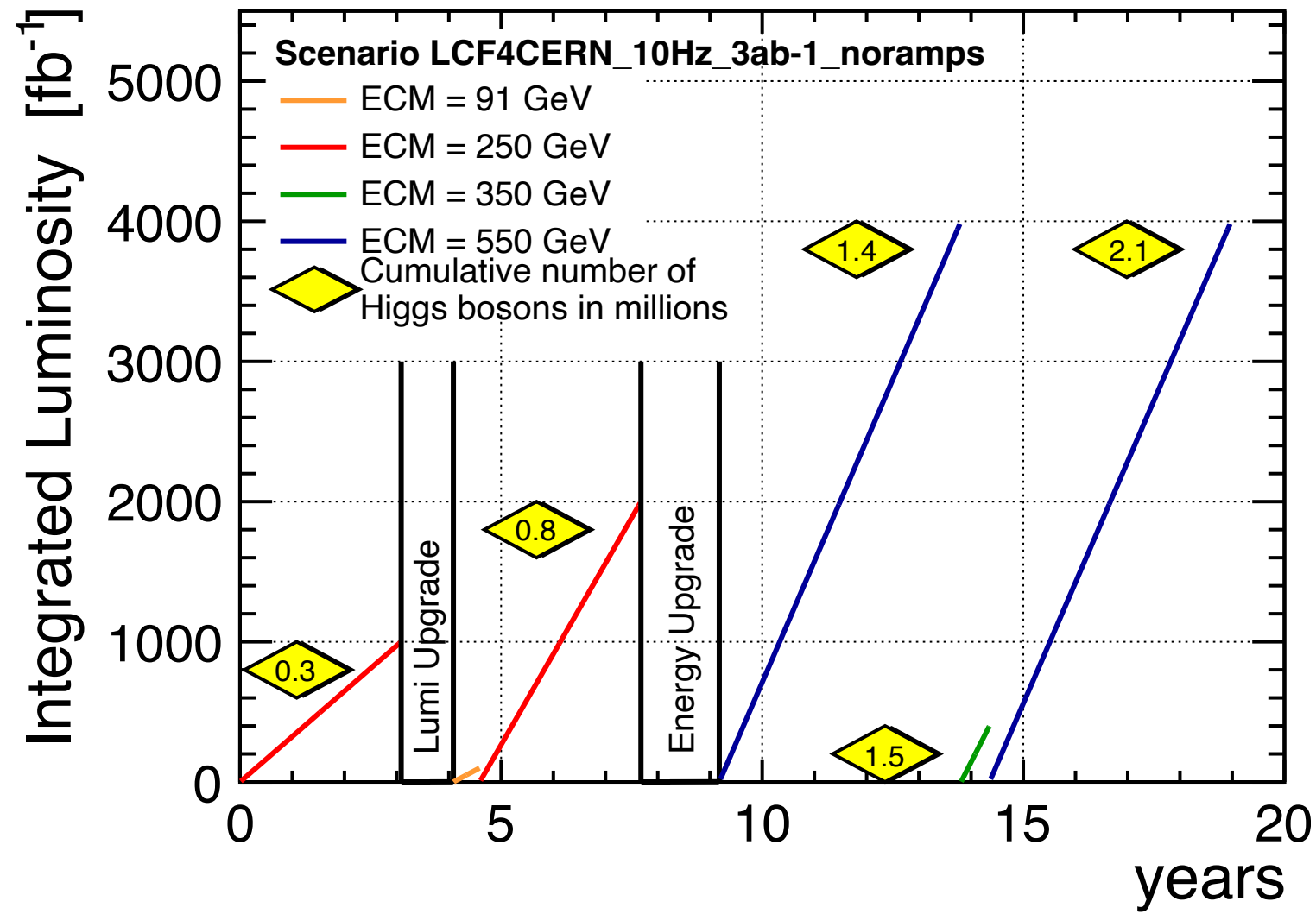
Running Scenario

for case a) “7.7BCHF” ; lumi-upgrade “450 MCHF” , energy-upgrade “3.7BCHF”



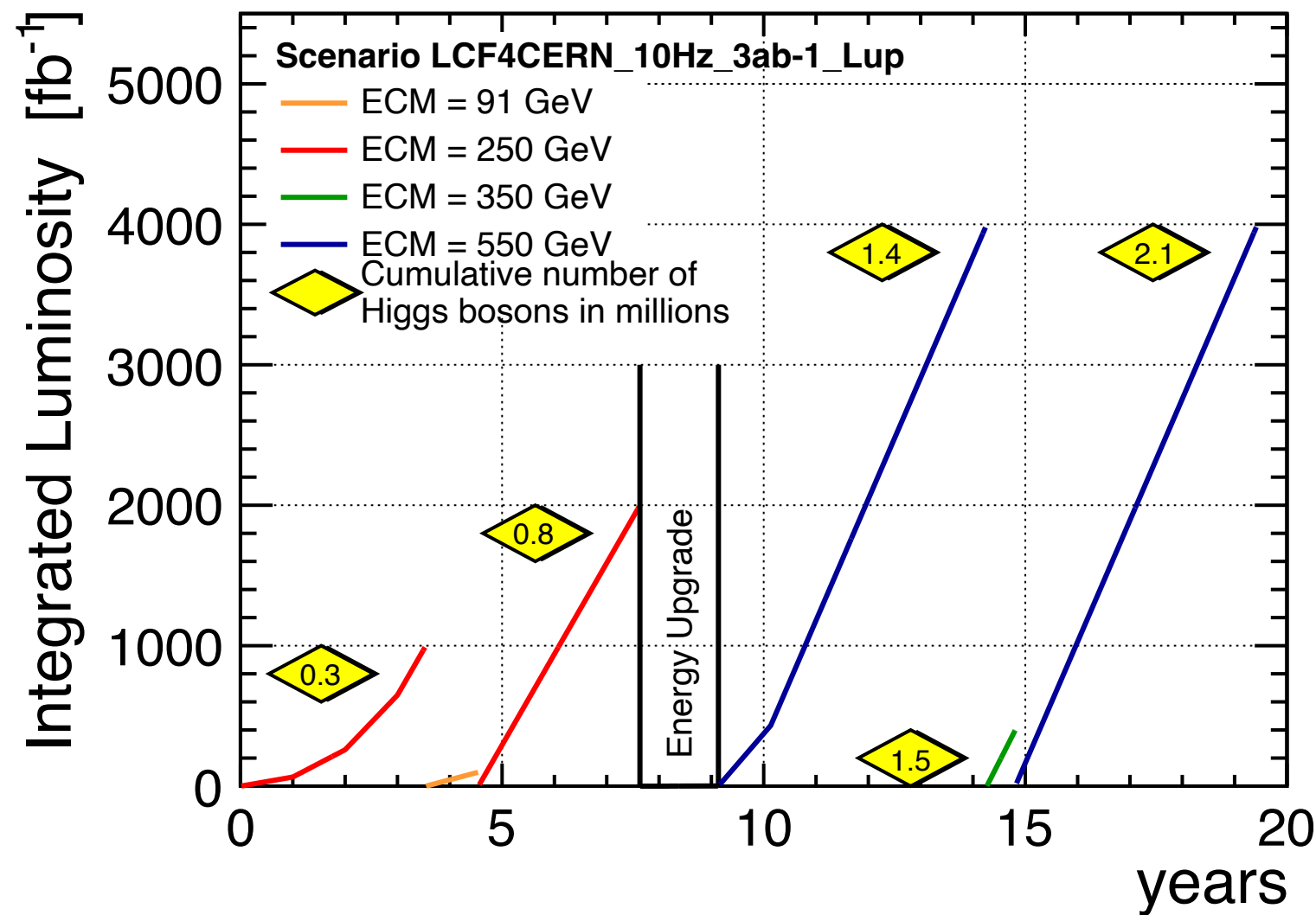
For comparison: no ramps

“no lumi ramp-up => 3 years less”



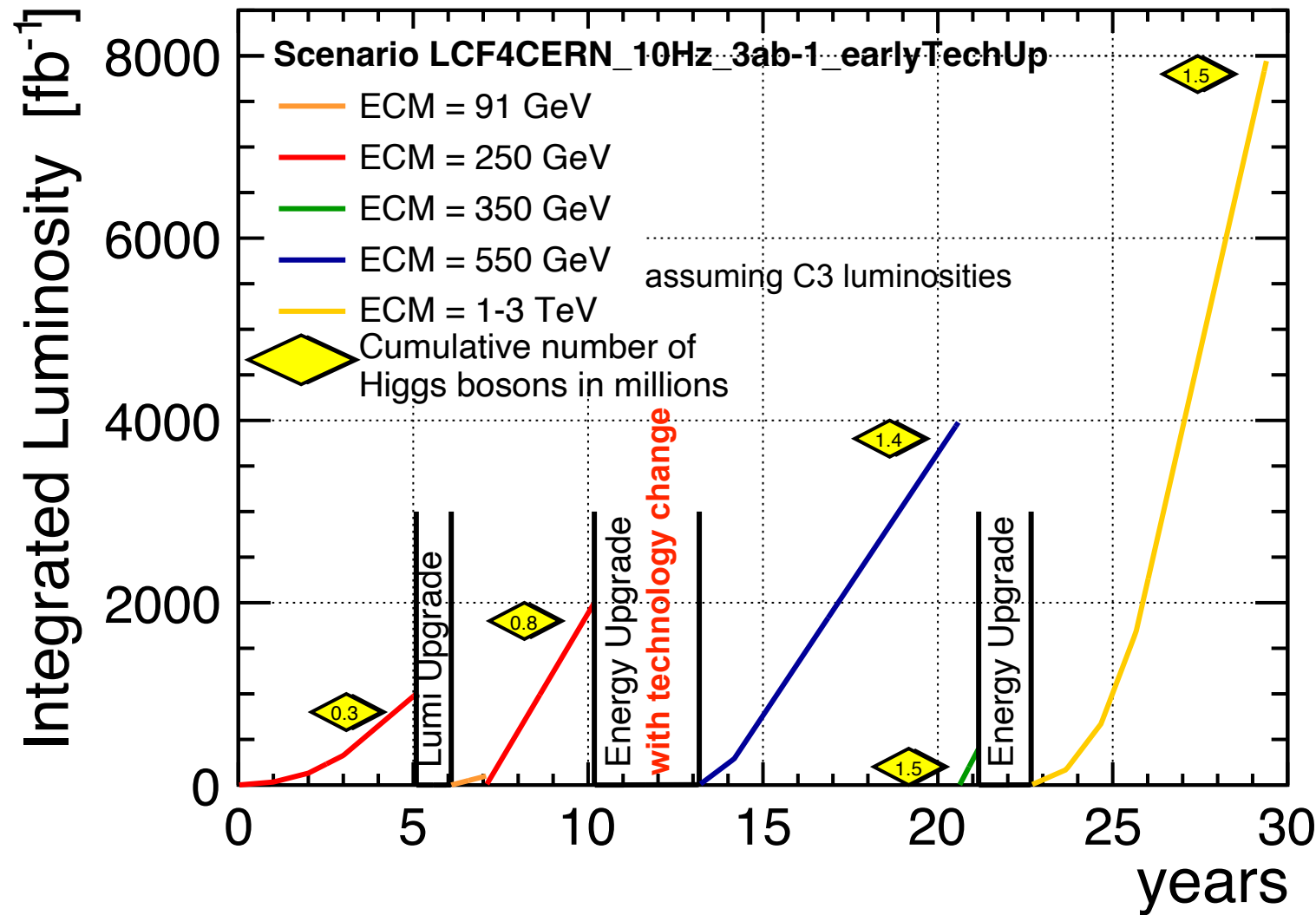
Running Scenario

for case b) “8.1BCHF”; energy upgrade “3.7BCHF”



Running Scenario

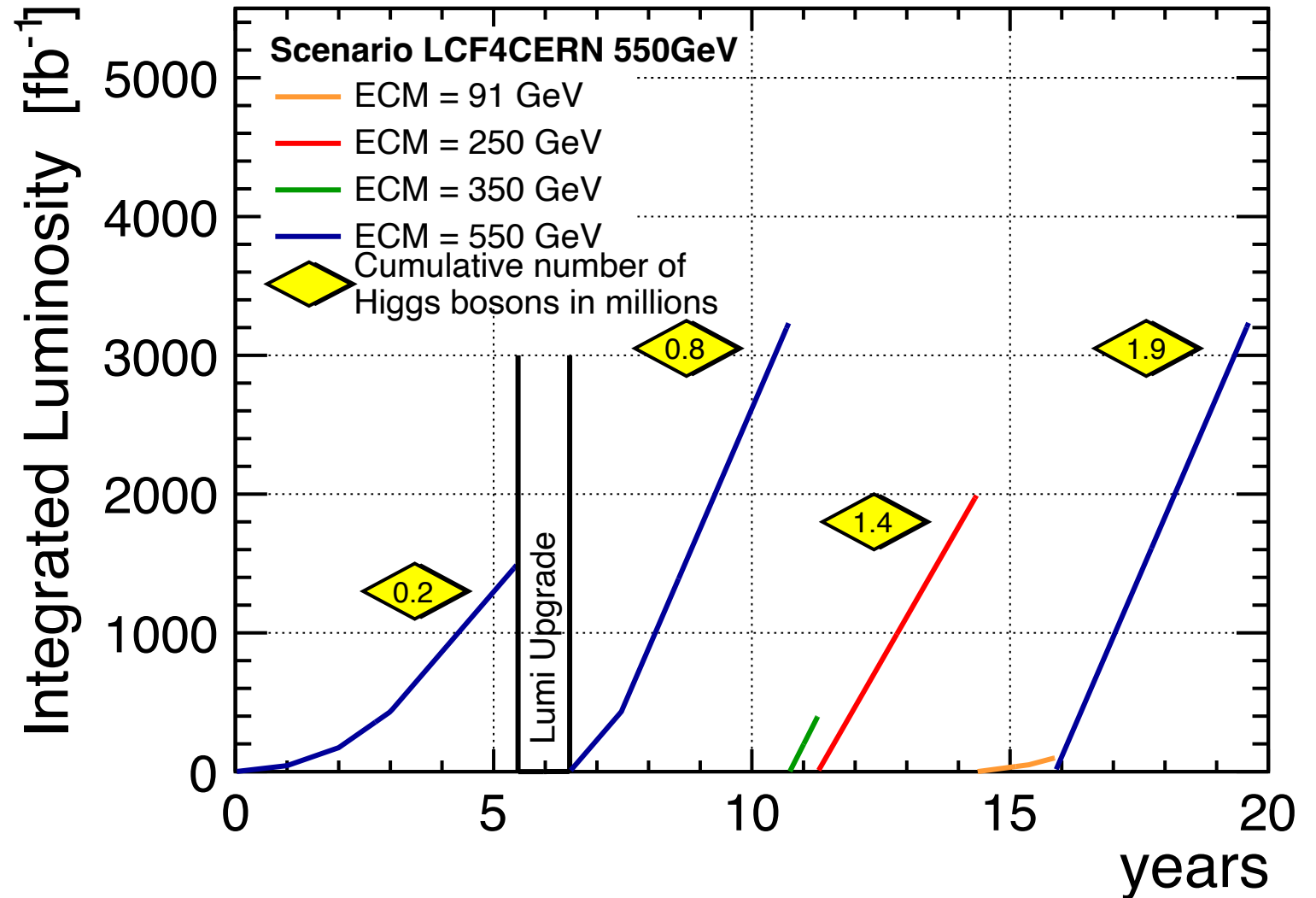
Early technology switch: cost unknown currently....but clearly an option to keep open



Running Scenario “if CEPC”

for case c) “11.7 BCHF” upgrade “450 MCHF”

- could keep lower energies for polarised data:
 - 2 ab-1 250 GeV
 - 100 fb-1 91 GeV
 - 400 fb-1 350 GeV
- Change technology for 1...2...3 TeV



Running Scenario “if CEPC” incl TeV upgrade

for case c) “11.7 BCHF” upgrade “450 MCHF” + unknown cost

- or remove lower energies:

- 2 ab-1 250 GeV
- 100 fb-1 91 GeV
- keep 400 fb-1 350 GeV
- Change technology for
 - 8 ab-1 3 TeV

