Future Collider scenarios

converging on our input statements

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Technical timelines for each collider option at CERN

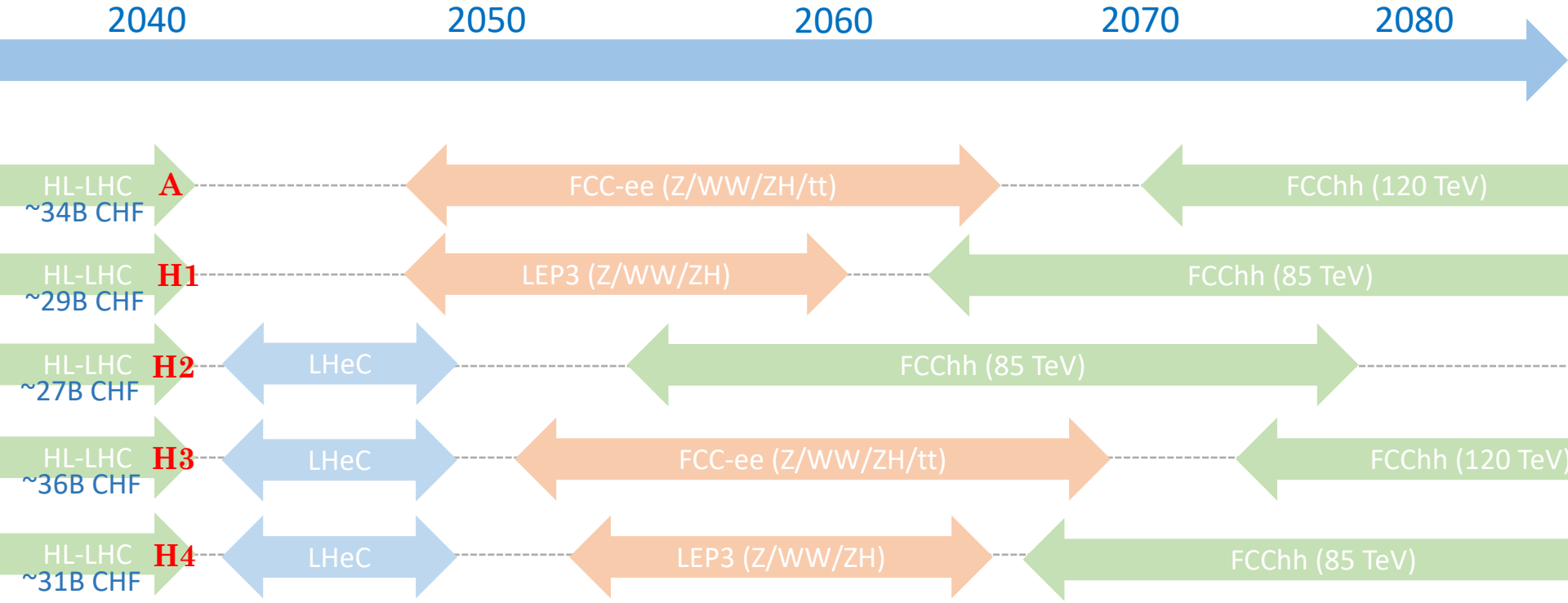
- **FCC-ee** – earliest 2048
- **FCC-hh** with 14T to 85TeV – earliest 2051-2055 (short model Nb_3Sn)
- **FCC-hh** with 20T to 120TeV – earliest 2070 (HTS)

- **LCF/ILC** SCRF from 250GeV to 550GeV (29.5km) – earliest 2045
- **CLIC** NCRF from 380GeV to 1.5TeV (33.5km) – earliest 2045

- **MuColl** 7.6TeV – earliest 2048 (need an initial demonstrator project)

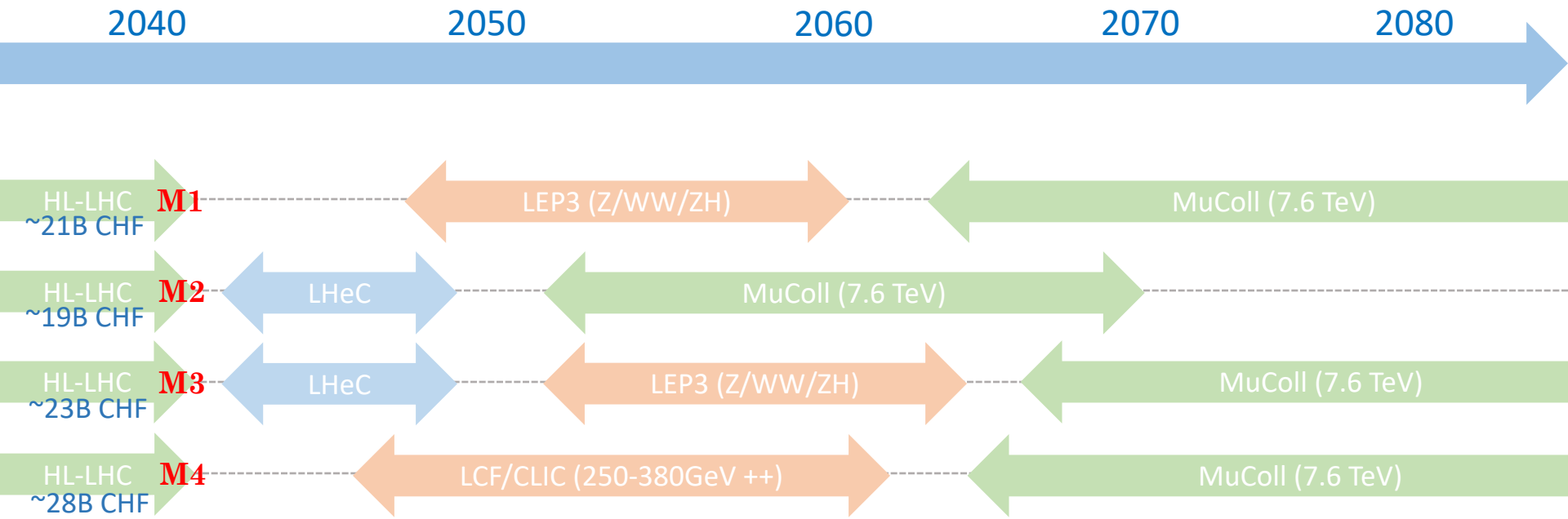
- **LEP3** after HL-LHC – earliest 2047
- **LHeC** after HL-LHC – earliest 2043

scenarios to FCChh



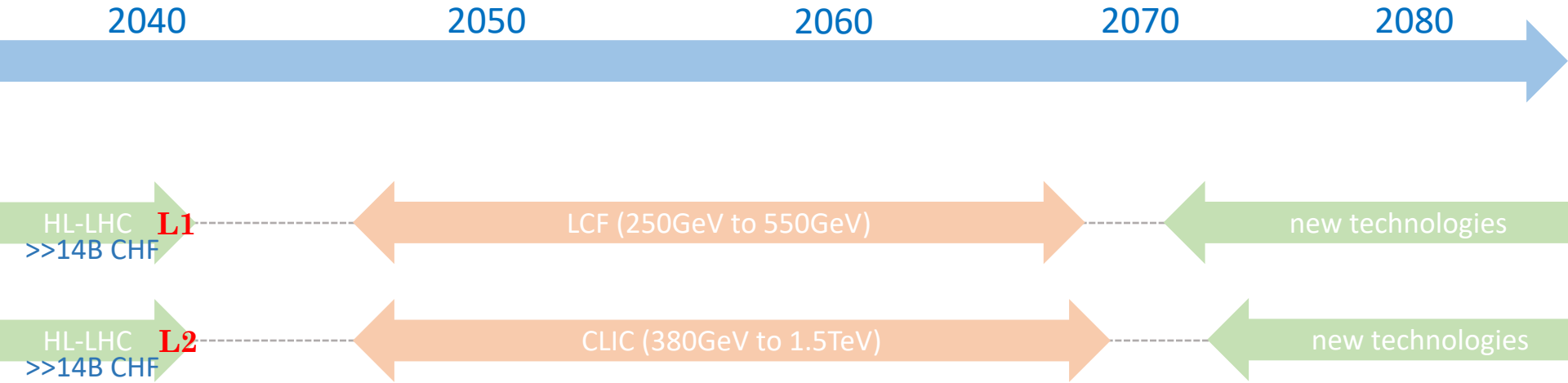
costs do not include HF magnet R&D

scenarios to MuColl



costs do not include a muon collider demonstrator

scenarios to LC @ 10 TeV



Key elements we consider relevant

- Cost: CAPEX and OPEX
- T0 for high energy: earliest moment one can reach 10 TeV parton-level energy collisions
- Gap after HL-LHC: time without collisions at CERN
- Technical risk to reach high-energy collisions
- If CEPC would move forward, would there be significant competition
- If a high-energy collider is built elsewhere, would there be significant competition
- Physics coverage of the scenario, are there obvious gaps
- The level of technical innovation required for the accelerators in the scenario
- Does the scenario have risks related to sustainability arguments in the future
- Flexibility to adapt between first generation and second generation future collider