USQCD Long Range Computing Plan

April 2023 All Hands Meeting

Robert Edwards

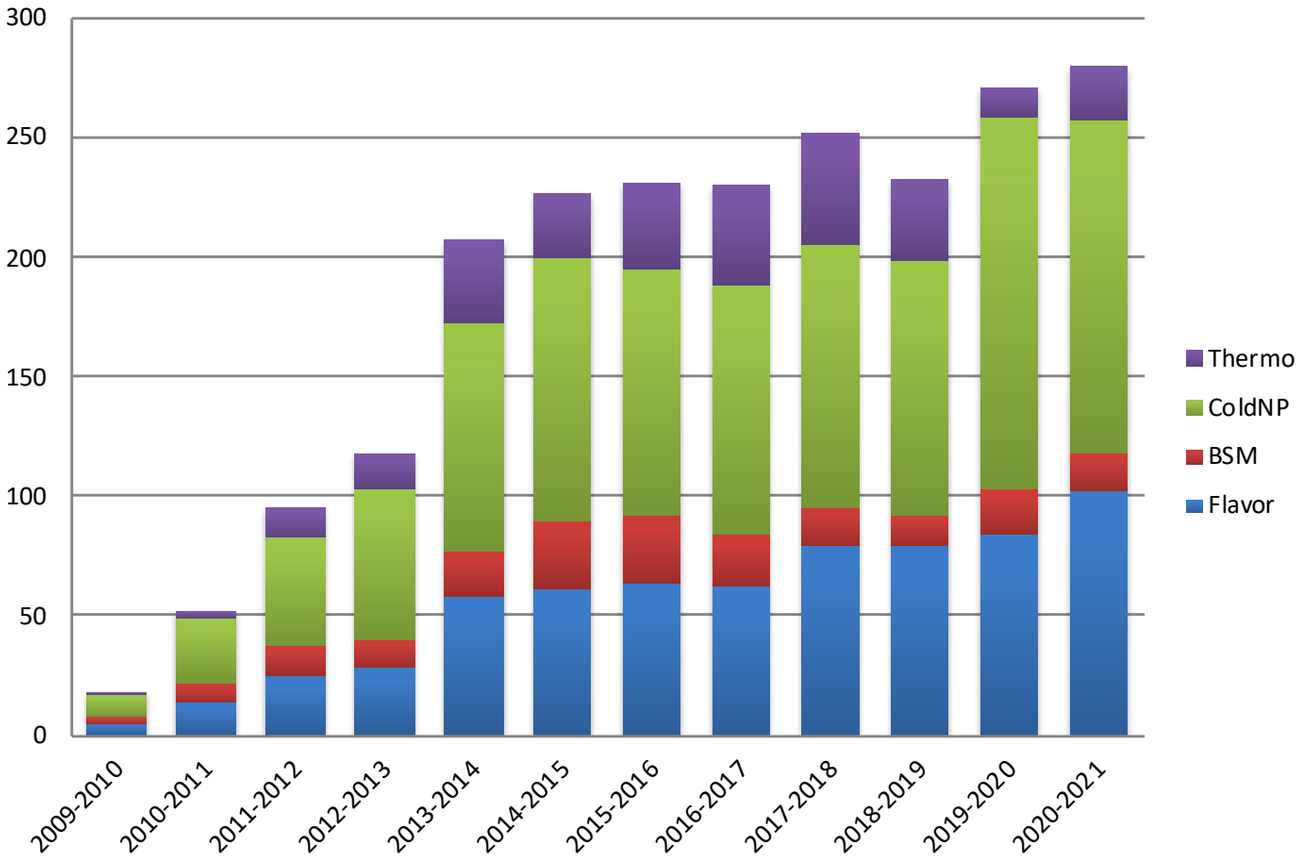
Jefferson Lab

Growing science program

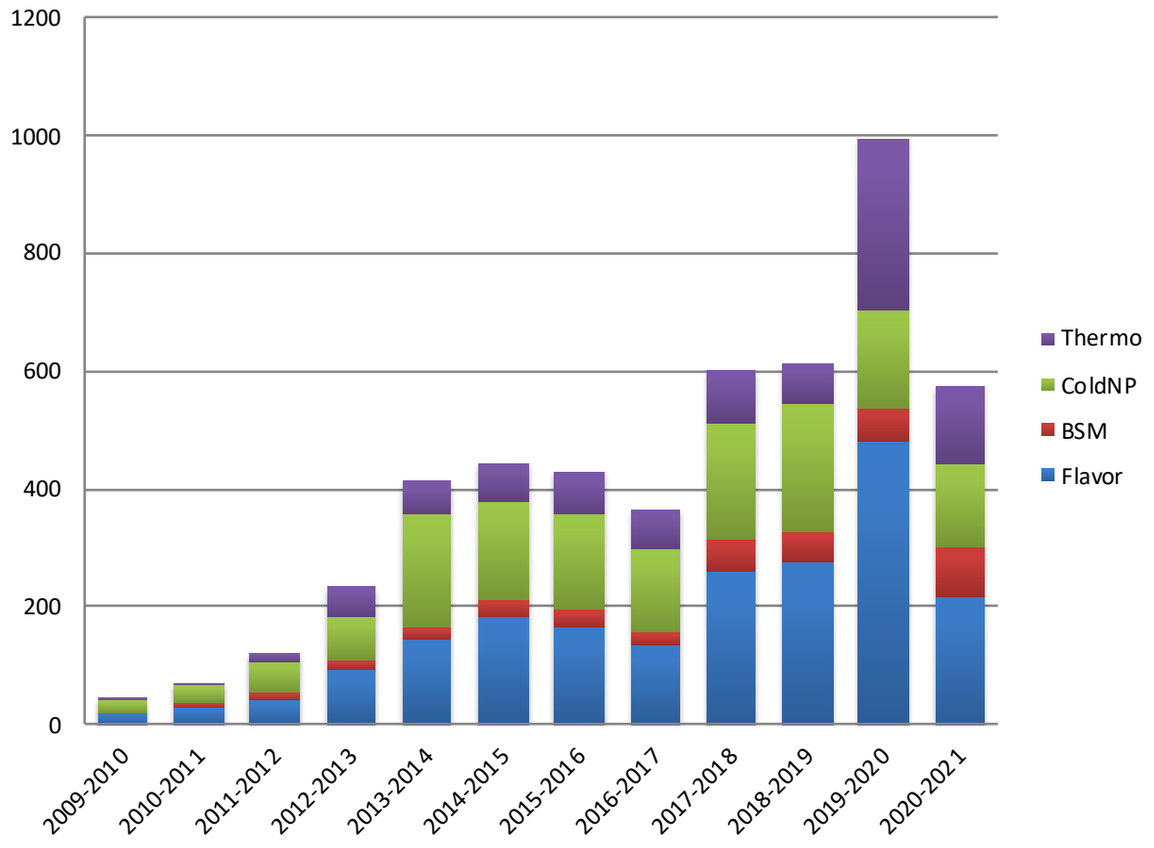
Need support for ambitious (growing) programs supporting goals of HEP and NP

"M-Skylake"-core-hours

USQCD hardware



USQCD+leadership



USQCD significant - about half to third of total amount

USQCD leverage of leadership resources → greater productivity

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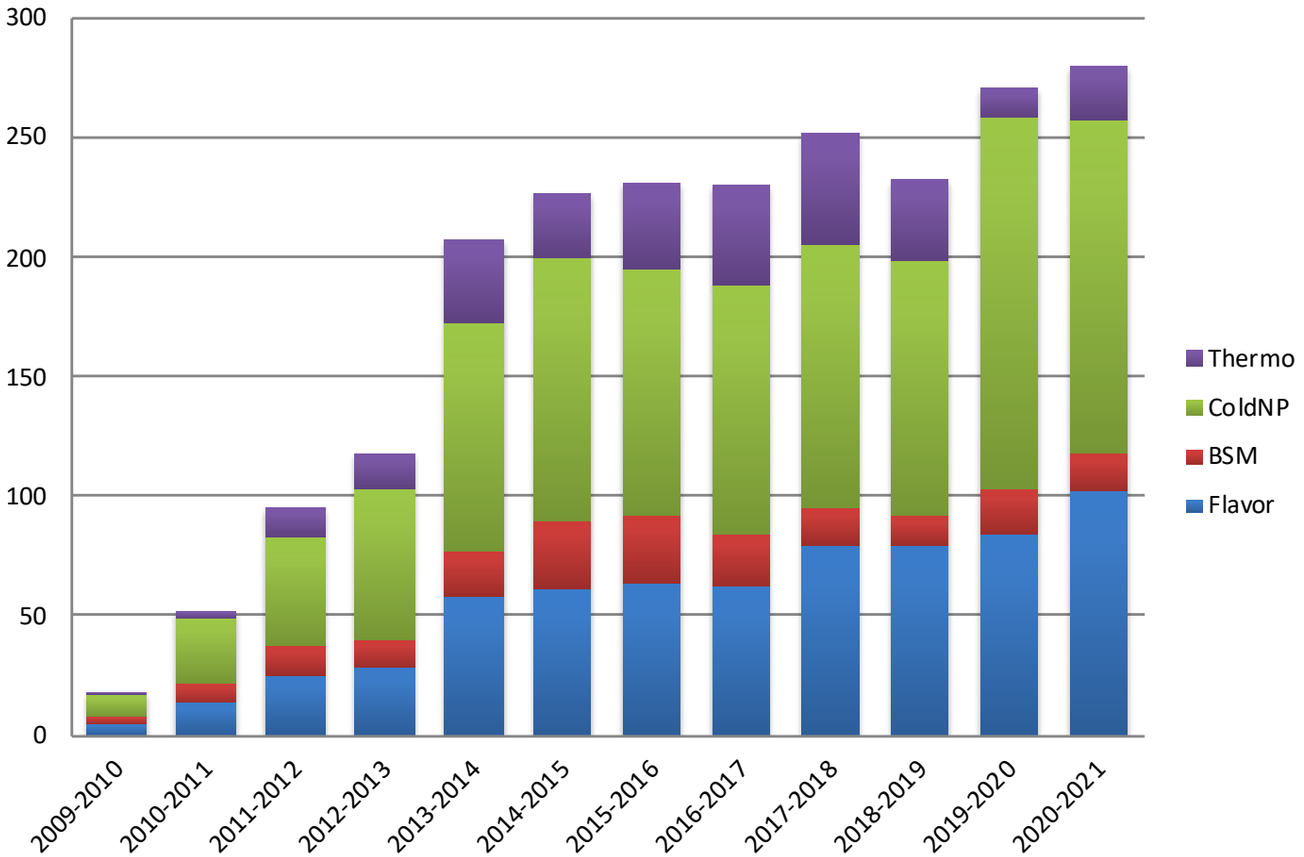

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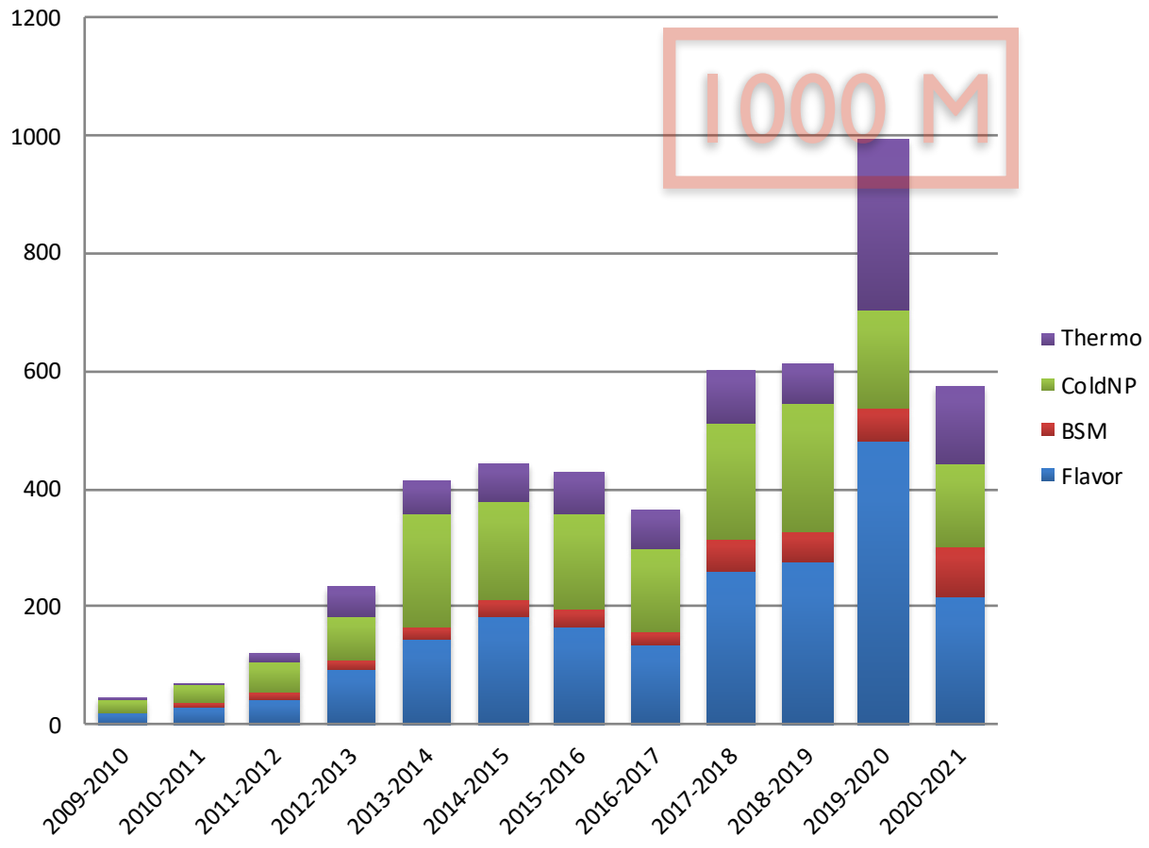

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Note scale!

LQCD funding profile for HEP & NP

- **Two LQCD initiatives**
  - HEP: LQCD Ext.-III (2020 - 2024) - $2.5M/yr - funds systems @ BNL and FNAL
  - NP: NPPLCI (2018 - 2024) - $1M/yr - funds systems @ JLab
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  - Institutional Clusters - site buys system, then leases out nodes to customers
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- **NP**
  - Dedicated/optimized clusters, aggregate funds for split purchase across fiscal boundary
  - Lower funds - need to aggregate to amortize costs

Objective: optimize LQCD funding profile

- **For HEP, move to a "ping-pong" model**
  - Determine operations costs for existing & new systems for BNL & FNAL
  - With available funds, aggregate purchases at BNL & FNL in alternate years
- **For NP**
  - New system every two years (need to shape funding)

- **Benefits**
  - Large systems accommodate our growing program
  - Amortize installation costs - new system every 2 years
  - Mitigate new platform fatigue for users & sites

- **Result:** Maximize science

LQCD reviews - 2023 & 2024

- A joint review scheduled for HEP and NP programs - May 2023
  - HEP charge letter:
    - Merits of updating program to include/allowed dedicated and IC resources
  - NP charge letter:
    - Reasonableness of 5 year plan for FY25-29
  - One committee & report to two program managers and two funding streams

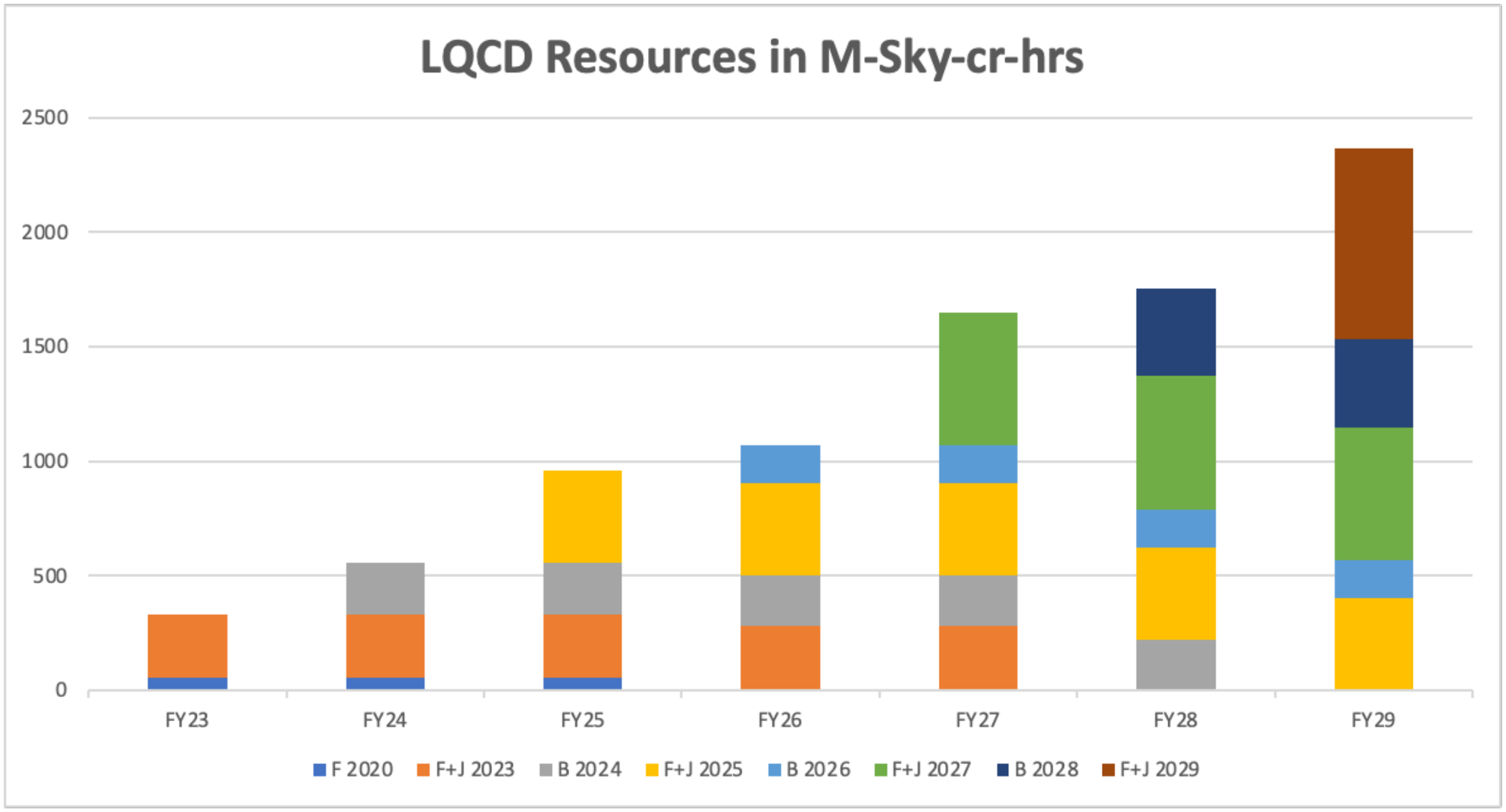
- Renewal in 2024 for new initiatives starting FY25 - 29

- Opportunity to formulate a long range computing plan for USQCD

Long range computing plan

- Deploy large system at each site every 2 years
- FY23 (FNAL & JLab), FY24 (BNL), FY25 (FNAL & JLab), …, FY29 (FNAL & JLab)
- Budget: $1.3M for each system - in odd years have $2.6M total for new systems

Model here - alternate CPU and GPU systems



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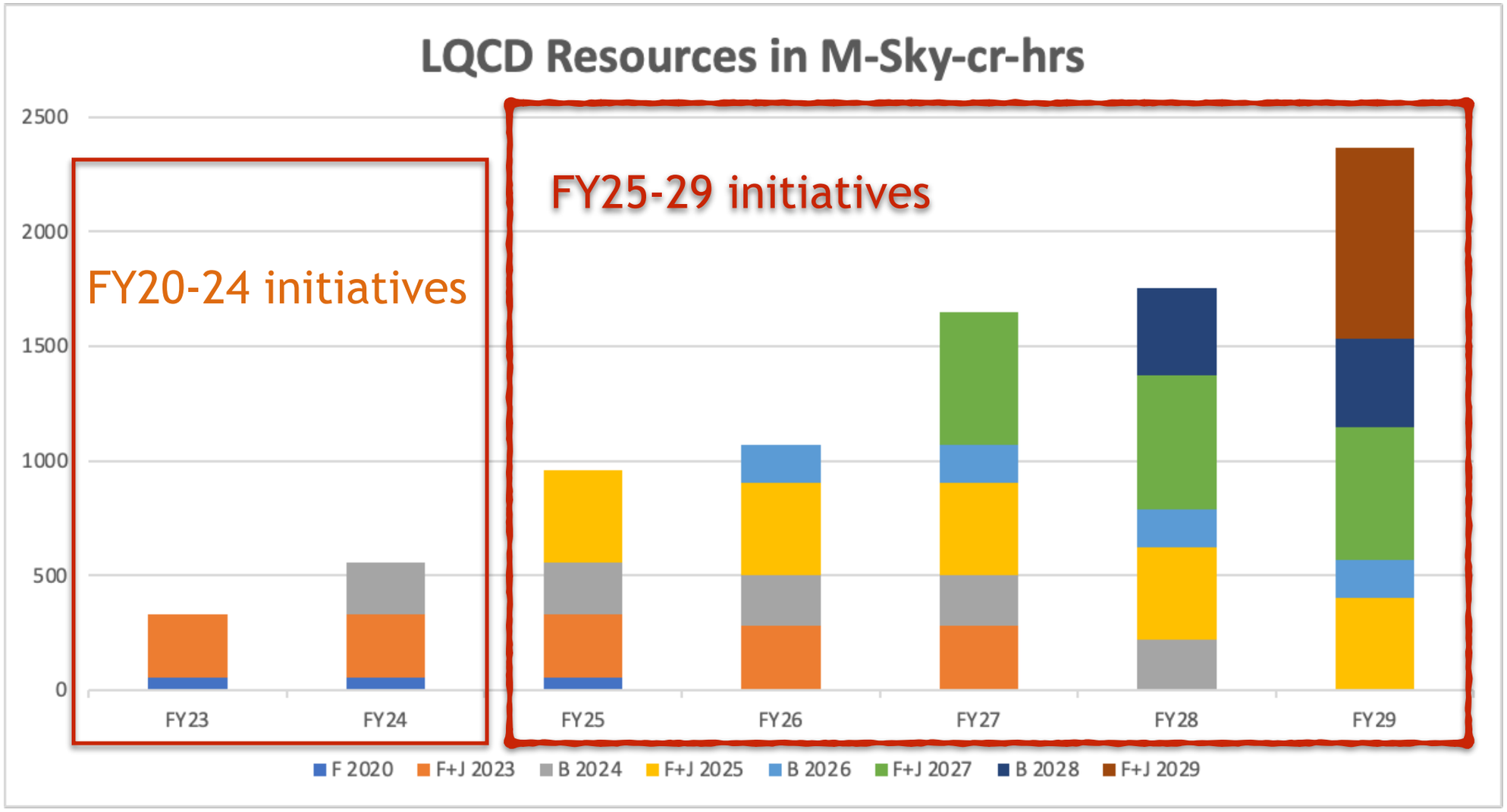

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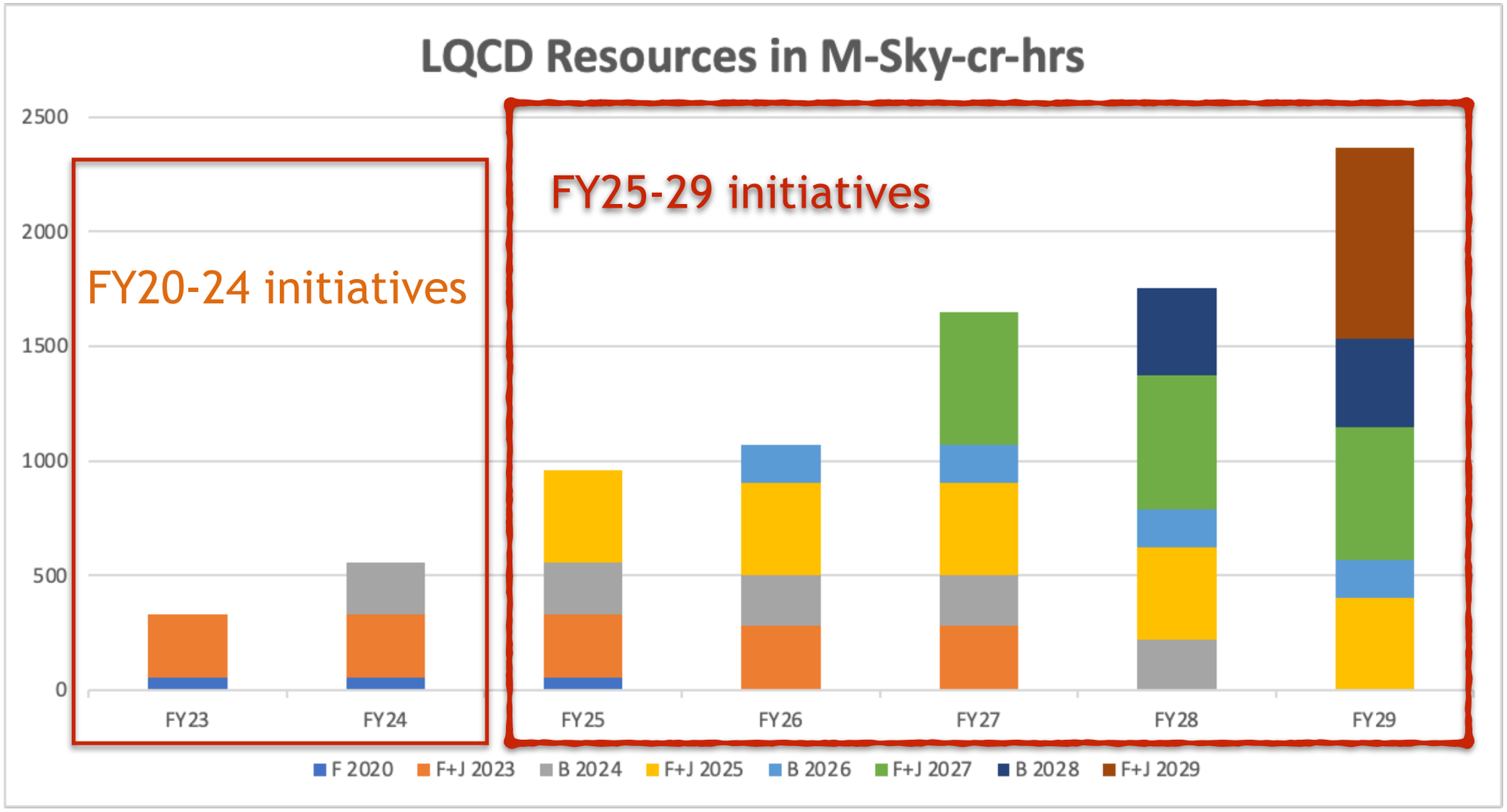

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➡ Looking forward to a positive review & endorsement for new plan

➡ And new resources for USQCD!