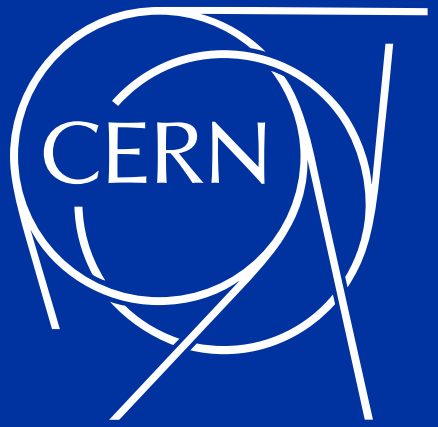
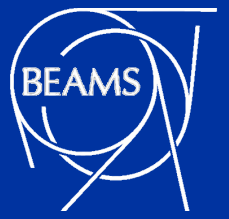




NA-CONS Project Status

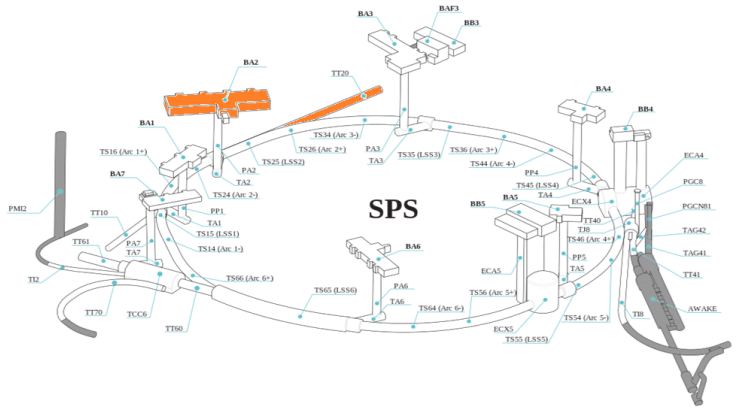
Y. Kadi (BE-EA) on behalf of the NA-CONS Project

162nd Meeting of the SPSC, September 8th 2026

Overview

- ❑ NA-CONS Project Scope
- ❑ North Area Availability & Faults
- ❑ Execution Schedule & Readiness
- ❑ Review of LS3 Activities & Important dates
- ❑ Procurement & Financial Situation
- ❑ Summary

NA-CONS Project

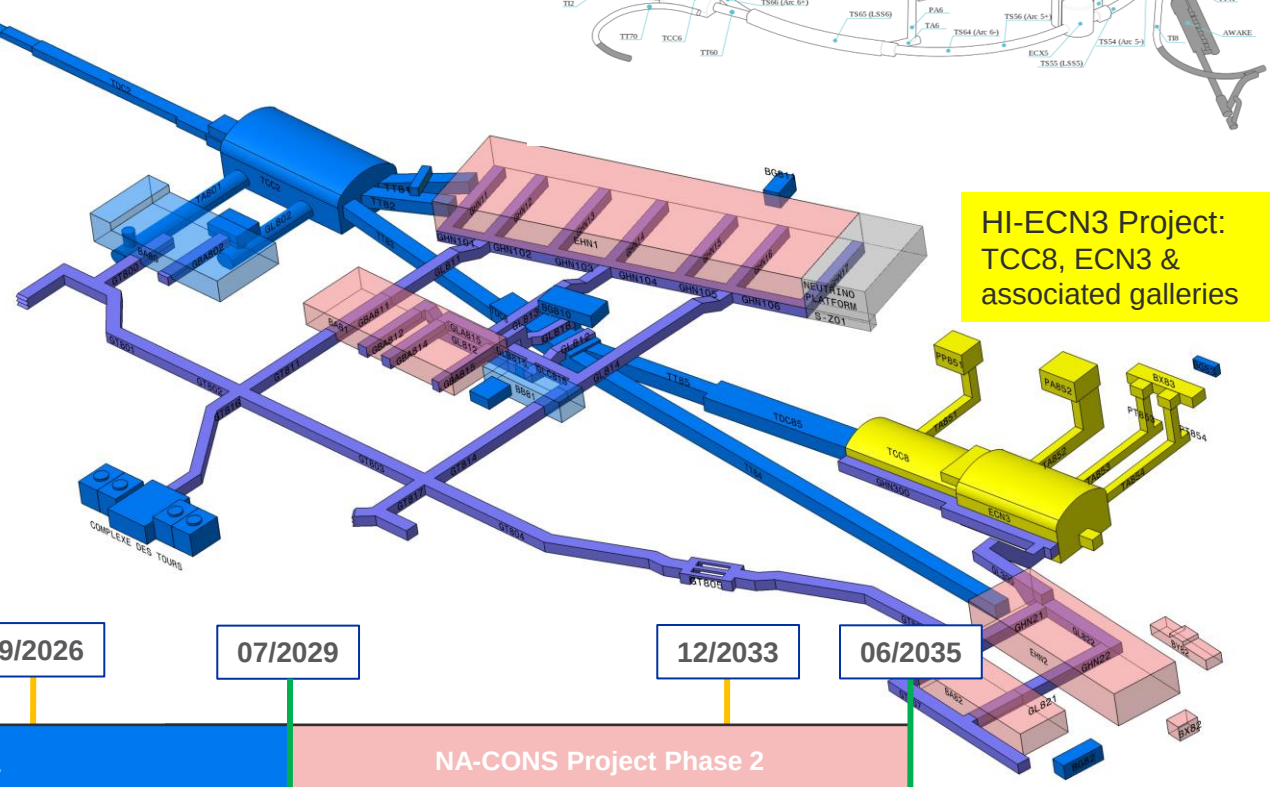


Renovation of the Fixed Target Experimental Area site after 48 years in view of:

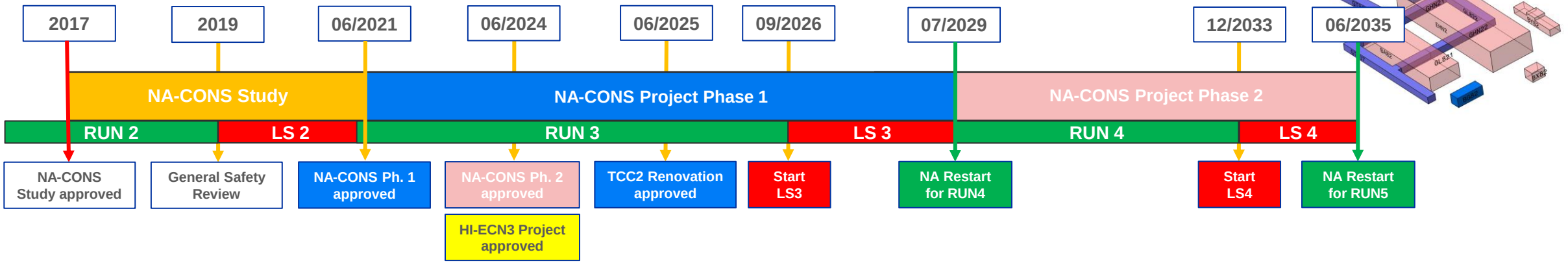
1. Recover the availability and reliability
2. Correct safety concerns and non-conformities
3. Be prepared for new experiments and test beams

Consolidation Phase 1 (2019 – 2029):
Primary areas incl. TT20, TDC2, TCC2, BA2, BA80 & beamlines towards EHN1 & TDC85

Consolidation Phase 2 (2029 – 2035):
BA81, BA82, EHN1, EHN2 & associated beamlines and experimental zones



HI-ECN3 Project: TCC8, ECN3 & associated galleries



NA-CONS Project

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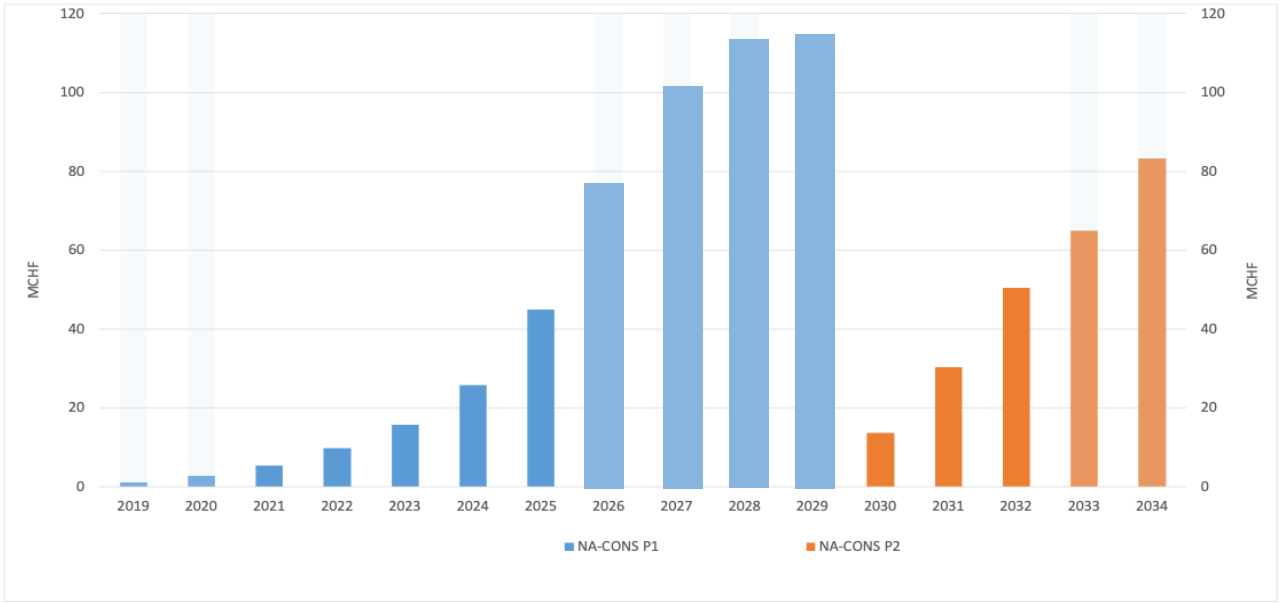
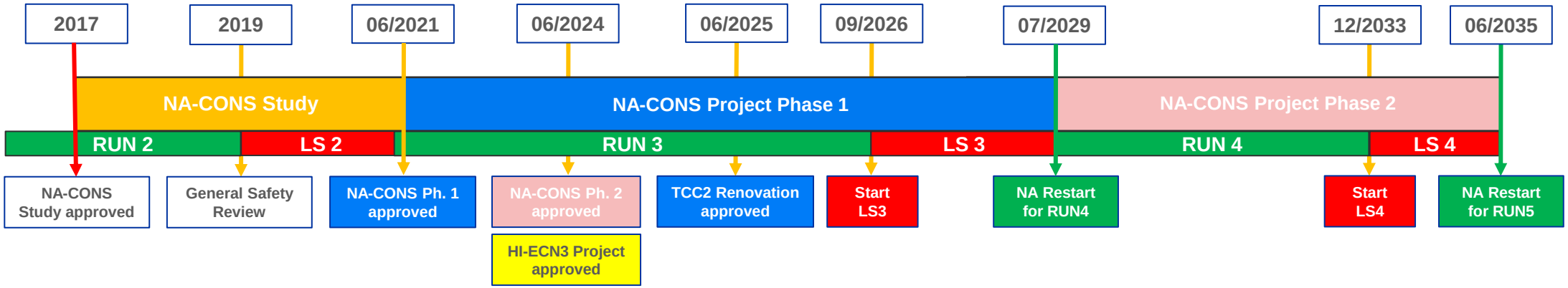
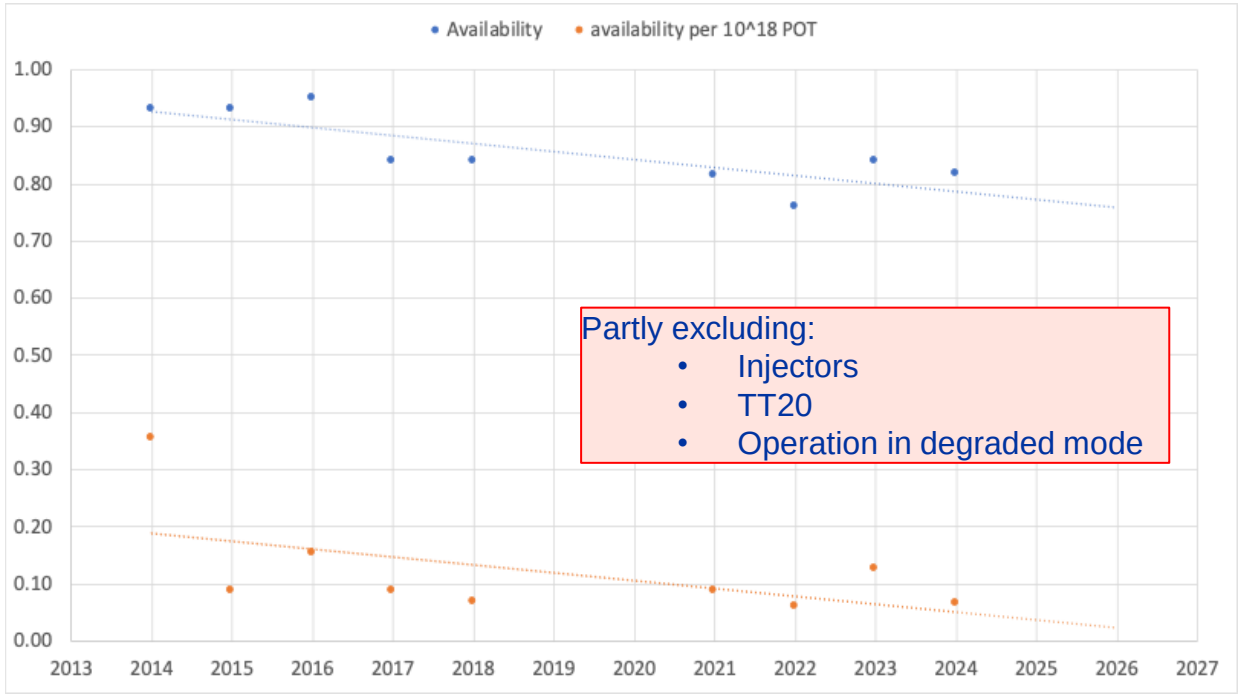
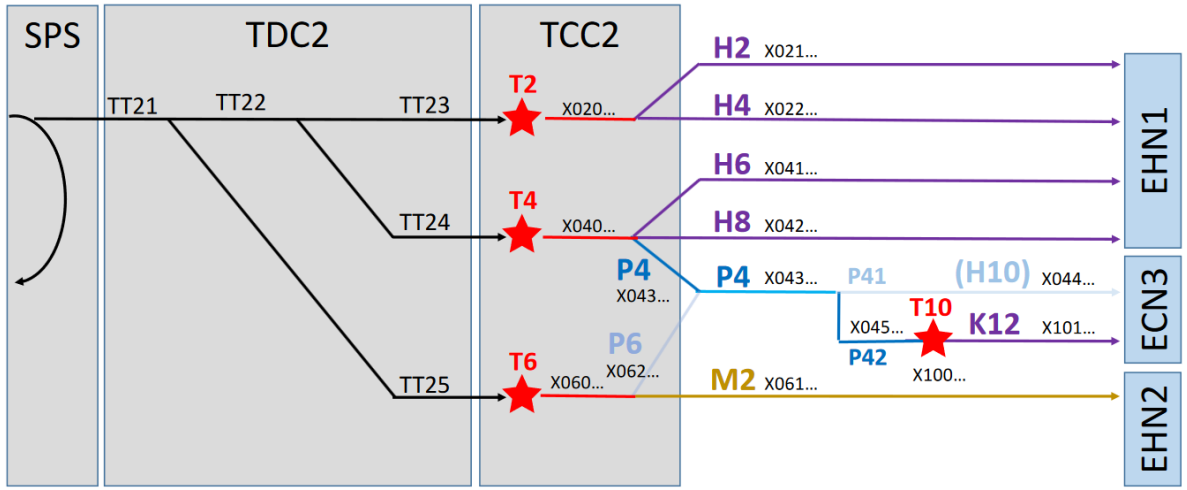




Decreasing beam availability (as predicted)



Partly excluding:
- Injectors
- TT20
- Operation in degraded mode



Higher failure rate and severity
- Water leaks → Floods, damages
- Misalignments → Beam losses, transmission
- Electrical and fire events

Fast and efficient interventions

But:
→ Doses to personnel
→ Risk of collateral damages

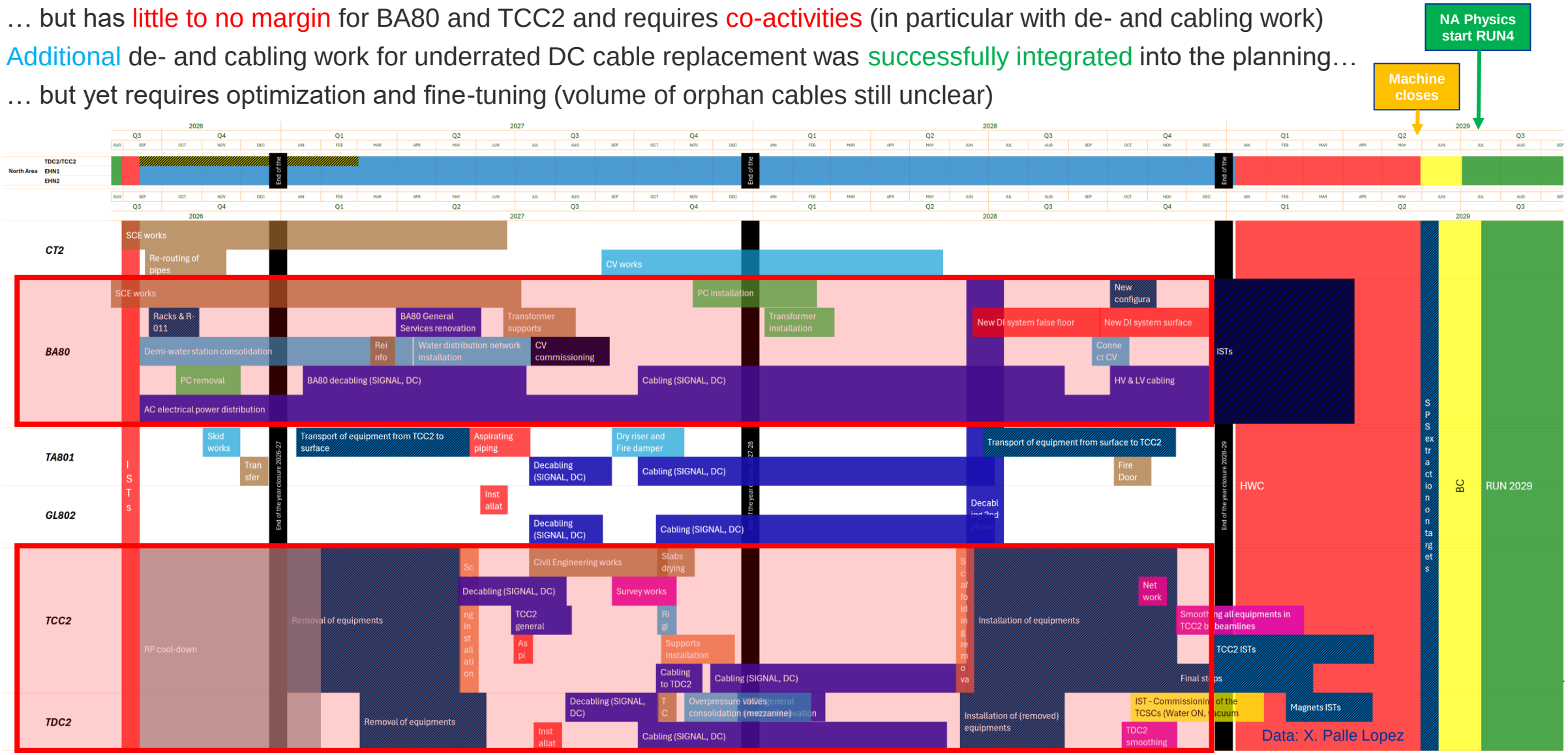
NA-CONS Execution Schedule

High-level resource-loaded planning based on WPA shows that all activities fit into the timeframe of LS3 schedule…

… but has little to no margin for BA80 and TCC2 and requires co-activities (in particular with de- and cabling work)

Additional de- and cabling work for underrated DC cable replacement was successfully integrated into the planning…

… but yet requires optimization and fine-tuning (volume of orphan cables still unclear)



Data: X. Palle Lopez

NA-CONS scope for the surface – BA80

Planned works in LS3:

[SCE] Renovation of the BA80 envelope (roof and façade)

[SCE] Upgrade of thermal insulation – thermal performance improvement

[SCE] False floor reinforcement

[SY-EPC] Replacement of over ~170 power converters

[EN-CV] Renovation of the cooling station and the water distribution network under the false floor

[EN-EL] Installation of new electrical infrastructure and cabling + new transformers

[EN-AA] Installation of a fire detection system and smoke extraction system

Coordination major challenges:

- ! Co-activities across SCE, EN-EL, EN-CV and SY-EPC (inside and outside of the building)
- ! Shared handling operations by EN-HE
- ! User's racks: lock-out & de-cabling activities
- ! Equipment transfers from underground to 954 and 955

NA-CONS scope for the surface – CT2

Planned works in LS3:

[SCE] Construction of a 5th cooling cell

[SCE] Rerouting of underground water piping serving BA80 and BA81 + adaptation of routing to allow integration of a potential 6th cell in the future

[SCE] CT2 façade renovation

[EN-CV] Installation of EN-CV equipment inside the 5th cell

[EN-CV] Upgrade and consolidation of CT2 cooling plant - pumping station

Coordination major challenges:

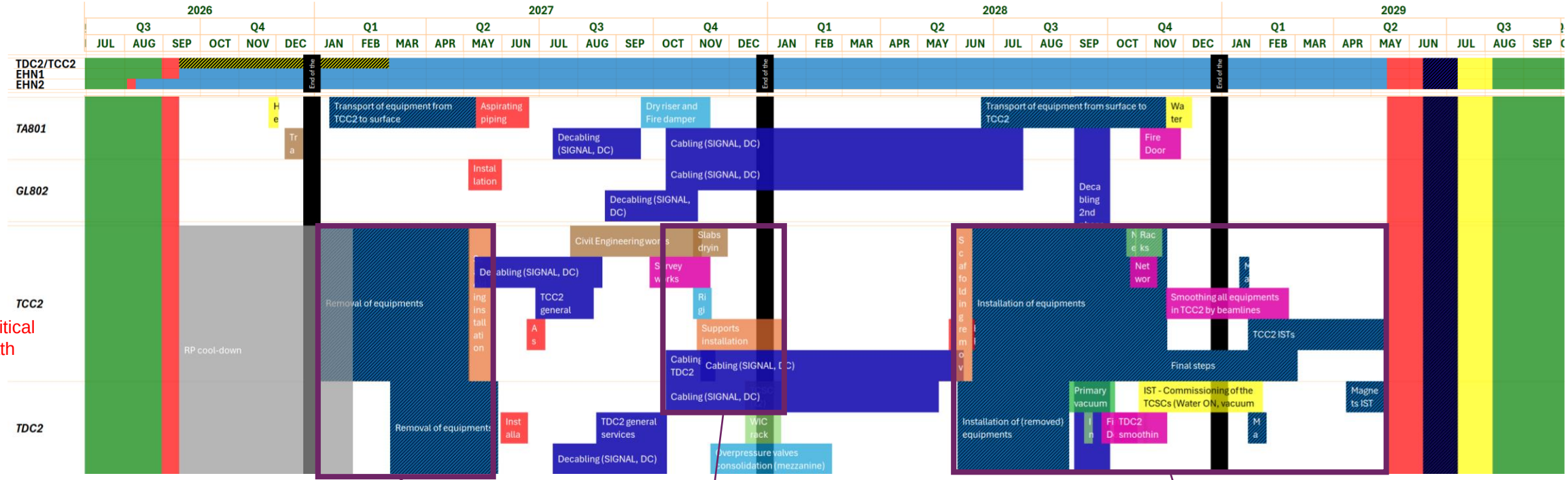
! CT2 non-operational – no cooling water in the whole NA

During: 01/09/2026-10/07/2027 and 01/09/2027-26/05/2028
→ potential impact on experiments which requested to run during LS3
→ impact on humidity level and dew point value in ECN3
→ impact on temperature and humidity of working conditions in North Area

! Heavy works

! Risk mitigation (Legionella, chemical, electrical)

LS3 Underground Activities



Critical path

TCC2 / TDC2 removal of equipment and supports – EDMS3413321

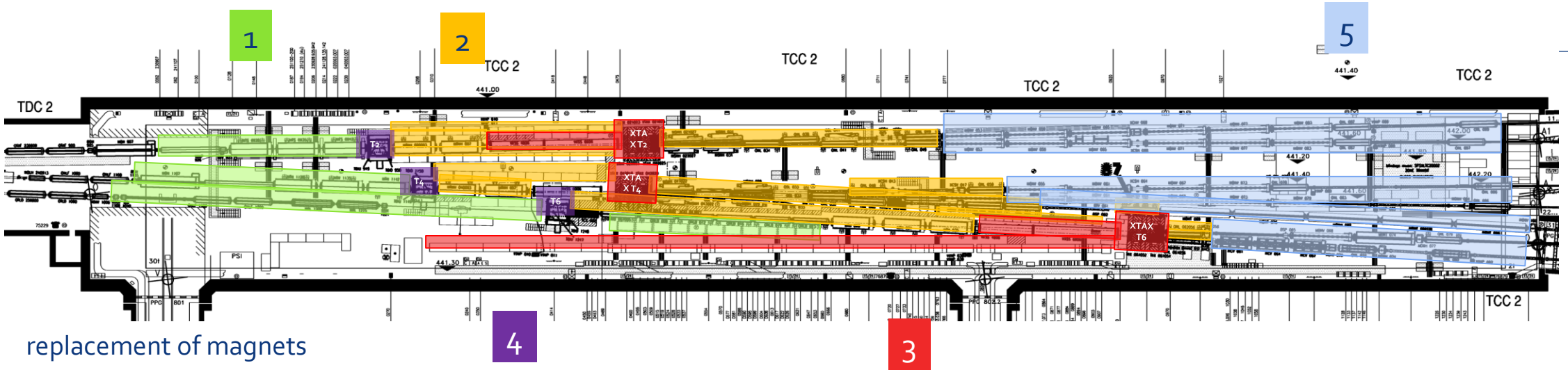
- Magnets
- BIDs, XTAX, XTCX, TCSC
- Instrumentation
- Targets
- Vacuum, VXSS

- Civil engineering
- New geodetic network and network measurement
- Floor marking (beamline and infrastructure)
- Rigid pipes installation
- Supports installation
- Cabling

- TCC2 / TDC2 installation of equipment
- Smoothing
- ISTs

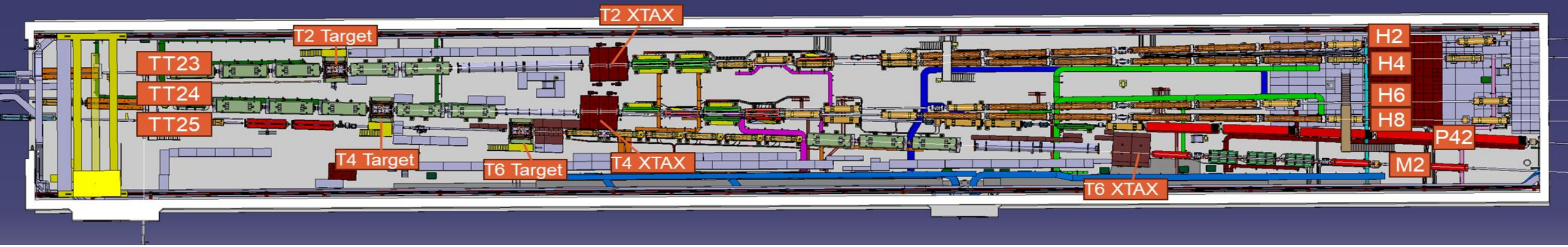
Data: X. Palle Lopez

TCC2: Before/After LS3



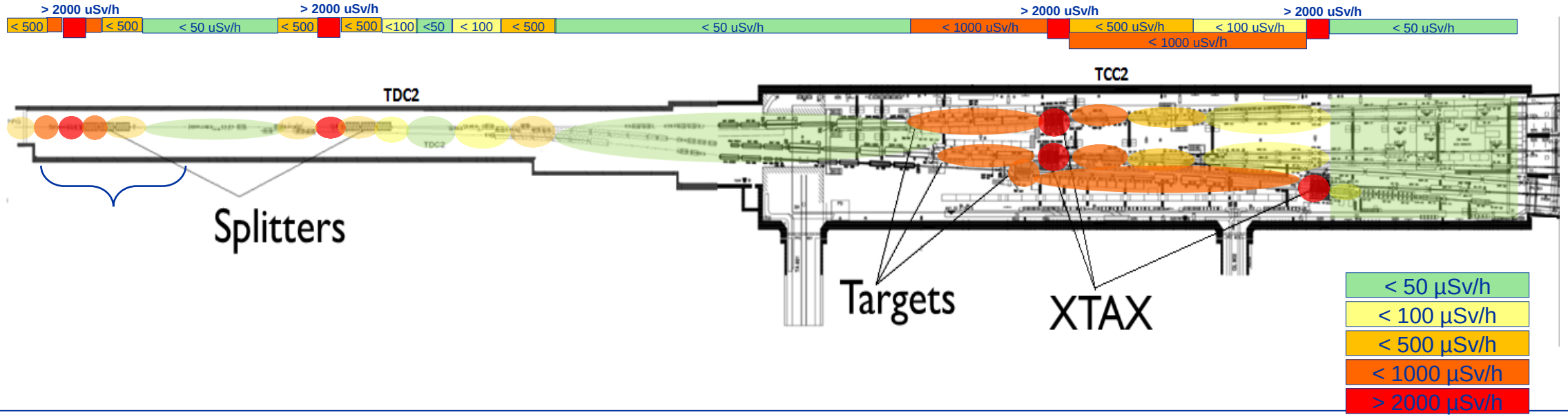
- replacement of magnets
- additional equipment and beamline modifications for HI-ECN3 beams
- upgrades and improvements (Vacuum, XTAX, VXSS, supports, services, etc.)
- RP requirements and constraints (shielding)

New TCC2 layout



Radiological Aspects

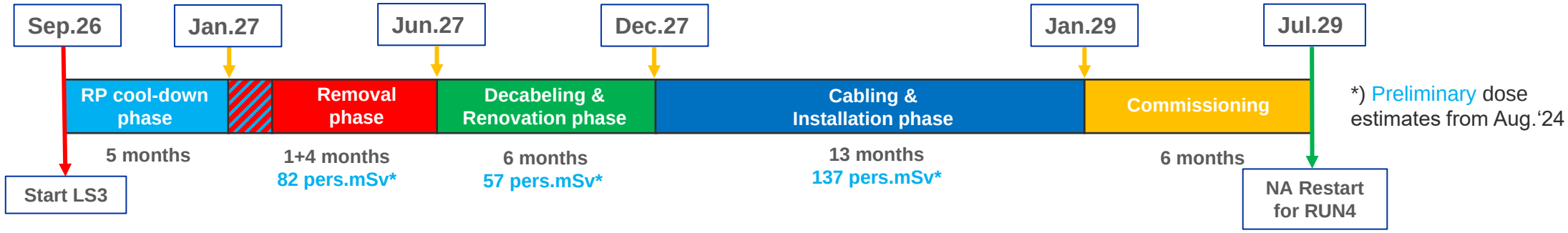
- Radiological situation for TDC2/TCC2 during LS3 expected to be similar as in LS1
- REX from LS1 shows that the planned amount of work in TCC2 can only be executed under the following conditions:
  - Reasonable cooldown time (≥ 6 months) can be guaranteed
  - Most of the highly radioactive elements are temporarily removed from TCC2
  - Sufficient size of intervention teams and number of experts to distribute dose and stay within the (legal) limits
  - A sufficient number of operational spares is available to mitigate the risk of unavoidable damage to fragile and highly radioactive magnets



Work Dose Planning & ALARA 3

Three ALARA 3 Committees planned for NA-CONS activities in TDC2/TCC2

see EDMS 3300704 and LS3C #27



#	Area	Project/package	Group	Level	ALARA committee date (proposal)	RSO	Est. Coll. Dose [person.mSv]
2	**SPS**	**NACONS**	**BE-EA**				
2.1	TDC2/TCC2/BA80	Dismantling of equipment	BE-EA	L3	Oct-26	BE	82
2.2	TDC2/TCC2/BA80	Decabling and renovation	BE-EA	L3	Mar-27	BE	57
2.3	Bld 867	Magnet refurbishment activities	TE-MSC	L3	Mar-27	TE	27
2.4	TDC2/TCC2/BA80	Reinstallation of equipment, connection of services, cabling, and survey	BE-EA	L3	Nov-27	BE	137

Data: A. Pardons

- ☑ Workflow optimization
- ☑ Preparation of WDP (Work and Dose Planning) by intervening equipment/service groups

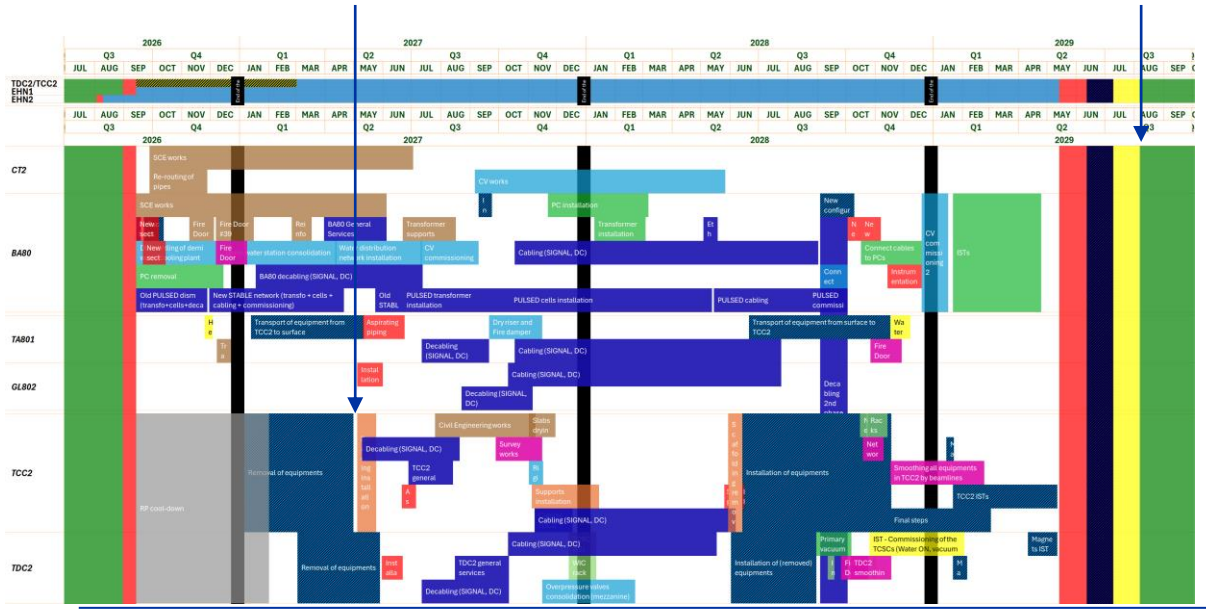
Preparation of DIMR (Dossier d'Intervention en Milieu Radioactif) by NA-CONS

TCC2 dismantling: 2 shifts vs 1 shift

2-shifts

End of TCC2 dismantling
05.05.2027

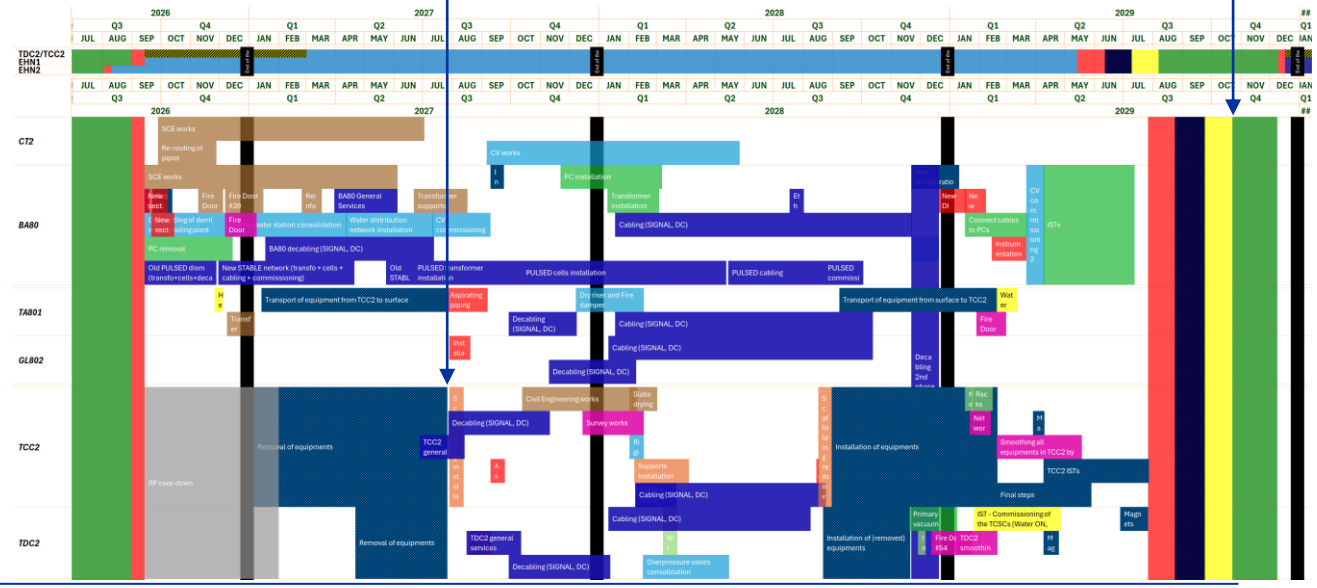
Restart of physics
07.08.2029



1-shift

End of TCC2 dismantling
26.07.2027

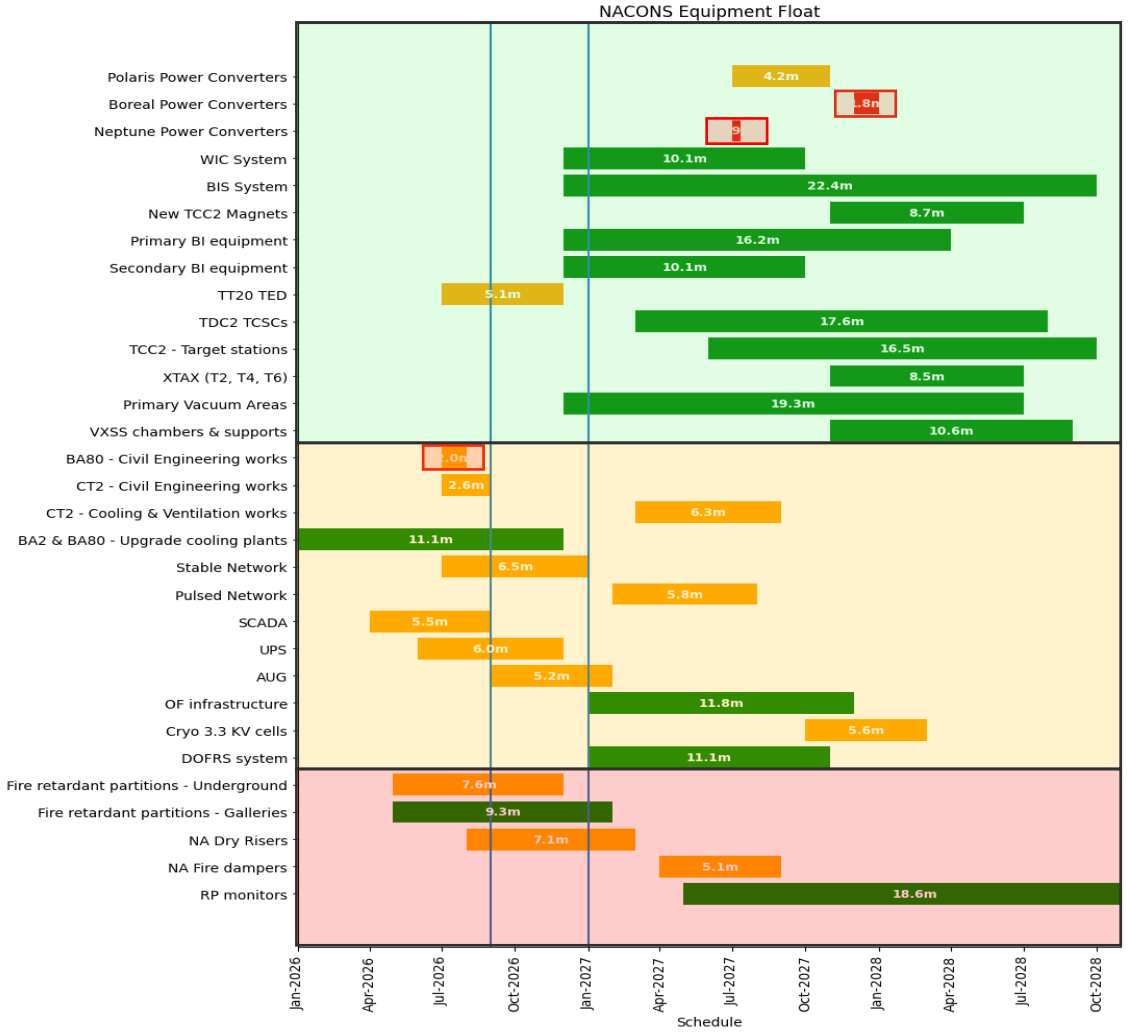
Restart of physics
23.10.2029



Float Monitoring

Float = time between equipment readiness and installation date

Float	Duration	Action
	≤ 2 months	Mitigate
	2 - 8 months	Monitor
	> 8 months	Safe



- POLARIS: Float reduced due to non-conformities of components; requires more detailed installation planning based on batched deliveries
- BOREAL: Delays in MV transformer procurement; needs very close monitoring
- NEPTUNE: Critical for BA2 installation planning
- New TCC2 magnets: Require close monitoring in contract follow-up; needs more detailed installation planning
- Secondary BI XBPF: Reduced float; scope changes ongoing
- TT20 TED: Float reduced, because installation was anticipated
- XTAX (T2, T4, T6): Reduced float due to delays in the design office impacting procurement; requires careful monitoring
- VXSS T4 & supports: Float reduced due to other high priorities; carefully monitored
- BA80 CE works: needs careful monitoring
- BA2 & BA80 cooling plants: Float increased through planning optimization; procurement on time
- CT2 SCE & CV works: Float increased thanks to planning optimization
- OF Infrastructure, DOFRS & DC cabling: Sensitive to planning updates
- Fire-retardant partitions: Float was impacted by procurement; planning optimization in progress
- NA Fire dampers and Dry Risers: Float OK, but planning updates will be incorporated later

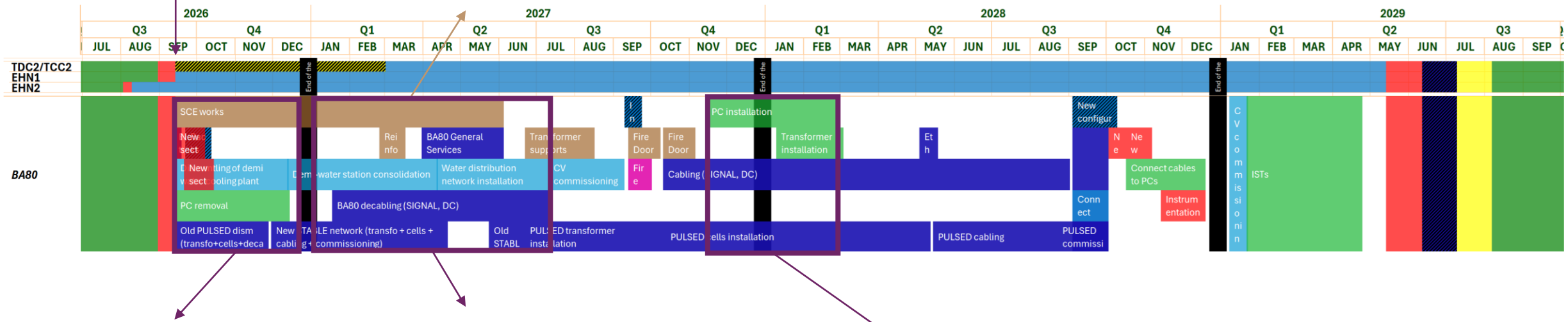
Floats are monitored closely by NA-CONS Project team and mitigated through proactive planning and coordination

Data: D. Kandhol

LS3 Surface Activities

BA80 Lockout - 8.9.26
CT2 cooling water off - 11.9.26

SCE works:
- New facade and roof insulation
- New smoke extractors



BA80 dismantling and SCE works – EDMS3413320
- Power converters
- EN-EL cells and transformers
- Cooling station
- Racks

- SCE works
- Decabling
- Reinforcement of false floor
- New cooling station and water distribution network
- New general services infrastructure
- AC new infrastructure

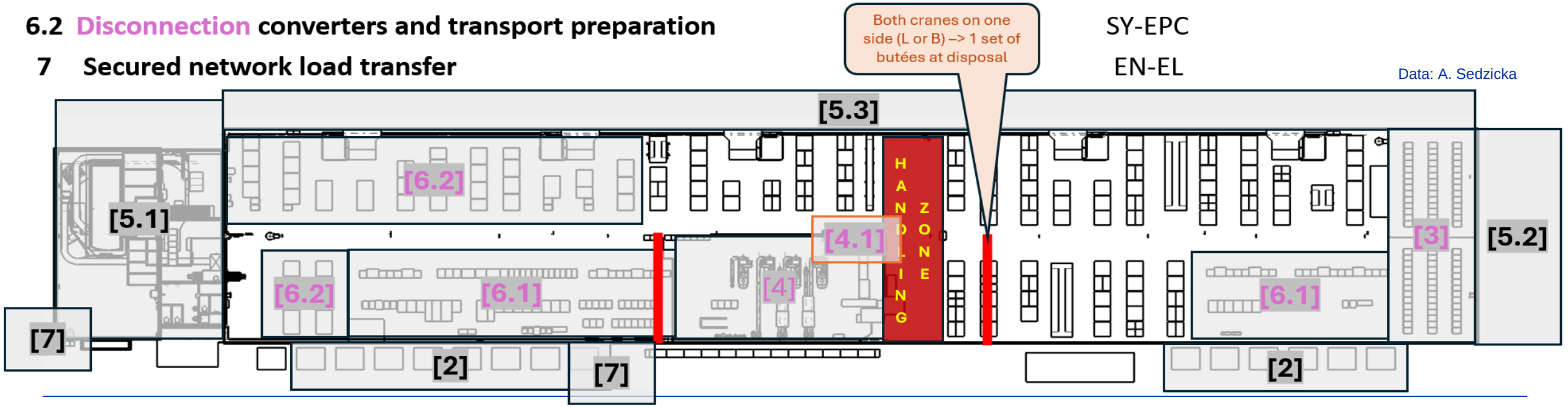
- Cabling
- New power converters installation
- AC new infrastructure installation

Data: X. Palle Lopez

crane locked out

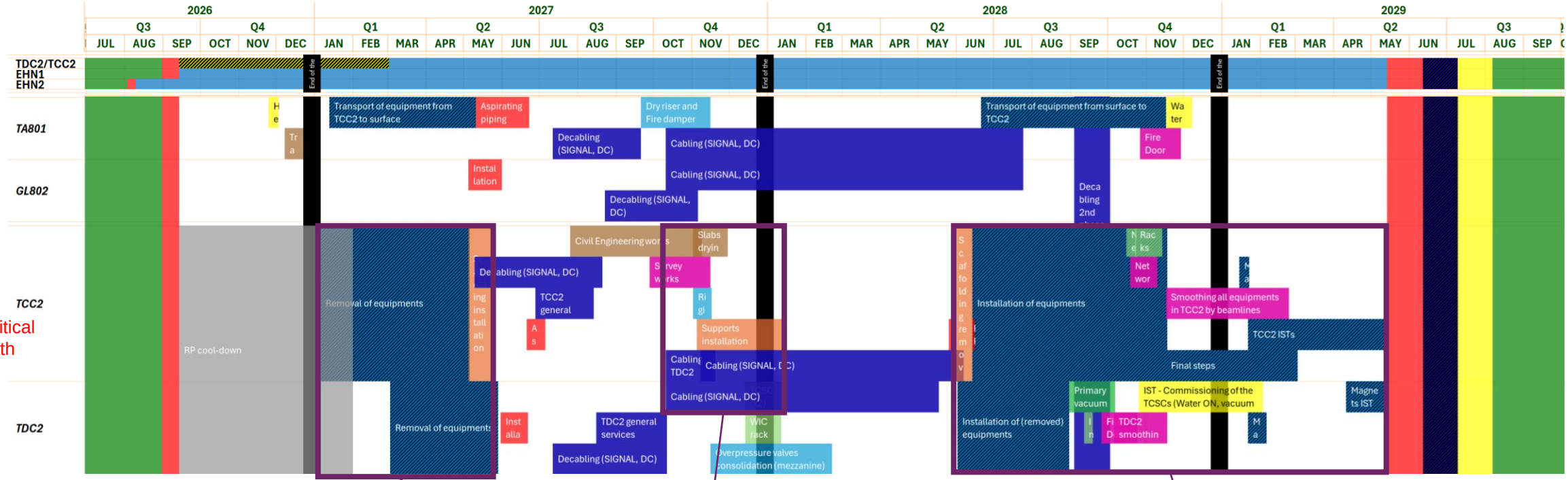
w38: 14.09.2026 → 18.09.2026 (1 week)

N	Activity	Crane	End date	Groups involved
2	**Transformers oil evacuation**			EN-EL
3	**Emptying the racks (Lausanne)**			All rack owners
4	Disconnecting cooling station			EN-CV
4.1	**Disconnection of expansion vessel (scaffolding)**			EN-CV
5.1	**CE works on concrete walls & roof**			SCE
5.2	**CE works on Lausanne façade**			SCE
5.3	**CE works on Jura facade**			SCE
6.1	**Disconnection EN-EL cells - converters**			EN-EL
6.2	**Disconnection converters and transport preparation**			SY-EPC
7	**Secured network load transfer**			EN-EL



Data: A. Sedzicka

LS3 Underground Activities



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- Supports installation
- Cabling

- TCC2 / TDC2 installation of equipment
- Smoothing
- ISTs

Data: X. Palle Lopez

LS3 Underground Activities

Data: B. Salvant / F. Gautheron

Task Name	Duration	Start	Finish	Groups
Leak, thermal and coil movement tests all NA excluding TCC2				
TT81-TT82-TT83	2 days	Mon 31.08.26 08:00	Tue 01.09.26 17:00	TE-MSC
TDC2	1 day	Mon 07.09.26 08:00	Mon 07.09.26 17:00	TE-MSC
TT84-TDC8-TT85-TDC85	3 days	Tue 08.09.26 08:00	Fri 11.09.26 17:00	TE-MSC
BI remote ISTs				
BI remote ISTs (SEM)	6 days	Mon 31.08.26 08:00	Mon 07.09.26 17:00	SY-BI
Disconnection and removal vacuum chambers (where needed)				
TDC8 (P42)	1 day	Mon 14.09.26 08:00	Mon 14.09.26 17:00	BE-EA
TT81	1 day	Tue 15.09.26 08:00	Tue 15.09.26 17:00	BE-EA
TT83	5 days	Thu 17.09.26 08:00	Wed 23.09.26 17:00	BE-EA;EN-THE
TT84	1 day	Thu 24.09.26 08:00	Thu 24.09.26 17:00	BE-EA
TDC85	5 days	Mon 28.09.26 08:00	Fri 02.10.26 17:00	BE-EA;EN-THE

LS3 Underground Activities

Data: B. Salvant / F. Gautheron

Task Name	Duration	Start	Finish	Groups
Shielding				
Ouverture blindage TT81-TT82	1 day	Mon 31.08.26 08:00	Mon 31.08.26 17:00	BE-EA;EN-THE
Removal of chicane	1 day	Thu 17.09.26 08:00	Thu 17.09.26 17:00	EN-THE
XCM Magnetic Collimator Consolidation				
Consignations, Deconnections	40 hrs	Mon 14.09.26 08:00	Fri 18.09.26 17:00	TE-MSC
Deconnection ctrl	8 hrs	Mon 21.09.26 08:00	Mon 21.09.26 17:00	BE-CEM
XCM SPXCMV_001-CR000003 - TT83 - 061.190				
SPXCMV_001-CR000010 - PPE211 - 061.997				
Manutention PPE211, chariot à Loer	8 hrs	Mon 21.09.26 08:00	Tue 22.09.26 08:00	BE-EA
Transport to EHN1, PPE134	8 hrs	Tue 22.09.26 08:00	Tue 22.09.26 17:00	EN-THE
Place targets/XTAX/Collimators on "ready to be removed" position Issue with XTAX 062.052 (P6) qui est verrouillé en position haute depuis des années	1 day	Mon 31.08.26 08:00	Mon 31.08.26 17:00	BE-CEM;SY-BI;SY-STI;TE-VSC

NA-CONS Calendar

1. September 2026	Start of LS3
14. September 2026	Beginning of works in BA80
October 2026	First NA-CONS ALARA3 committee (Dismantling)
January 2027	Start dismantling TCC2
March 2027	Second NA-CONS ALARA3 committee (Decabling & Renovation)
June 2027	Start Decabling & Renovation TCC2

LS3 Activities: Unavailability of services

Cooling water due to cooling tower CT2 under construction works from **09.2026** to **04.2027** and **09.2027** to **06.2028**

- No cooling water will be available during these periods, irrespective of the water type

Cryogenics unavailable from **04.2027** to **07.2027**

BA81 power converters unavailable from **11.2026** to **01.2028**
BA81 power converters partially locked-out from **02.2028** to **10.2028**

BA82 power converters unavailable from **01.2027** to **01.2028**
BA82 power converters partially locked-out from **04.2028** to **05.2028**

EHN1 UPS works from **10.2027** to **11.2027**

- Secured network impacted

Data: X. Palle Lopez
EDMS 3384942

LS3 Activities: No Access dates

All North Area

- AUG test – 28.10.2026 → 30.10.2026
- AUG test – 01.12.2027
- N/S network test – 08.02.2027

All North Area underground access

- PAD MAD maintenance – 01.12.2026 → 02.12.2026

BA81 / EHN1

- EN-EL HV/LV cells maintenance – 22.05.2028 → 29.05.2028

BA82 / EHN2

- EN-EL HV/LV cells maintenance – 07.06.2028 → 13.06.2028

Data: X. Palle Lopez
EDMS 3384942

LS3 Activities: Shared activities with HI-ECN3 and SPS

NA-CONS activities in SPS facilities

- TT20 General services
- TT20 Optical Fiber maintenance
- TT20 BLM consolidation
- TT20 Vacuum consolidation ion pumps
- TT20 TED consolidation
- TT20 BI equipment consolidation
- TT20 Installation of O-BLM
- TT20 WIC installation
- TT20 EN-EL Cabling campaign
- BA2 cooling plant upgrade
- BA2 new cooling pipes installation
- BA2 Converters consolidation (POLARIS, NEPTUNE)

All scheduled in LS3 SPS planning : EDMS 3092264

NA-CONS activities in HI-ECN3 facilities

- 911/918 Optical Fiber cabling
- 911/918/920/ECN3/TCC8 SCADA, AUG, UPS consolidation
- 911/918 Ethernet cabling
- 918 BI readout boards replacement

Scheduled in LS3 HI-ECN3 planning : EDMS 3324197

Being discussed

HI-ECN3 activities in BE-EA / NA-CONS facilities

- P42 beamline reconfiguration
- BA81/BA82 lockout for K12 dismantling
- BA82 power converters replacement (POLARIS)
- BA82 new piping network for POLARIS converters

Scheduled in LS3 NA planning : EDMS 3384942

Being discussed

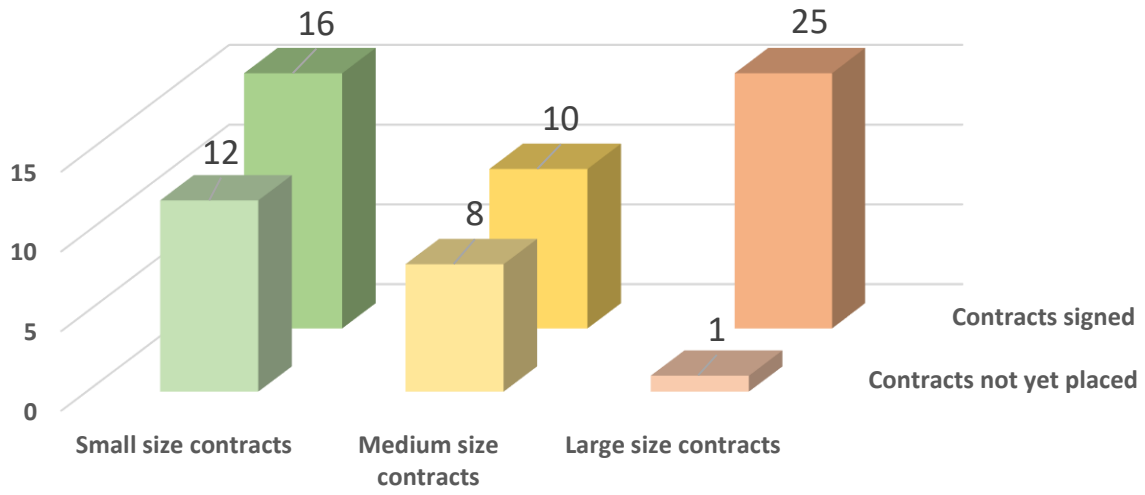
Data: X. Palle Lopez
EDMS 3384942

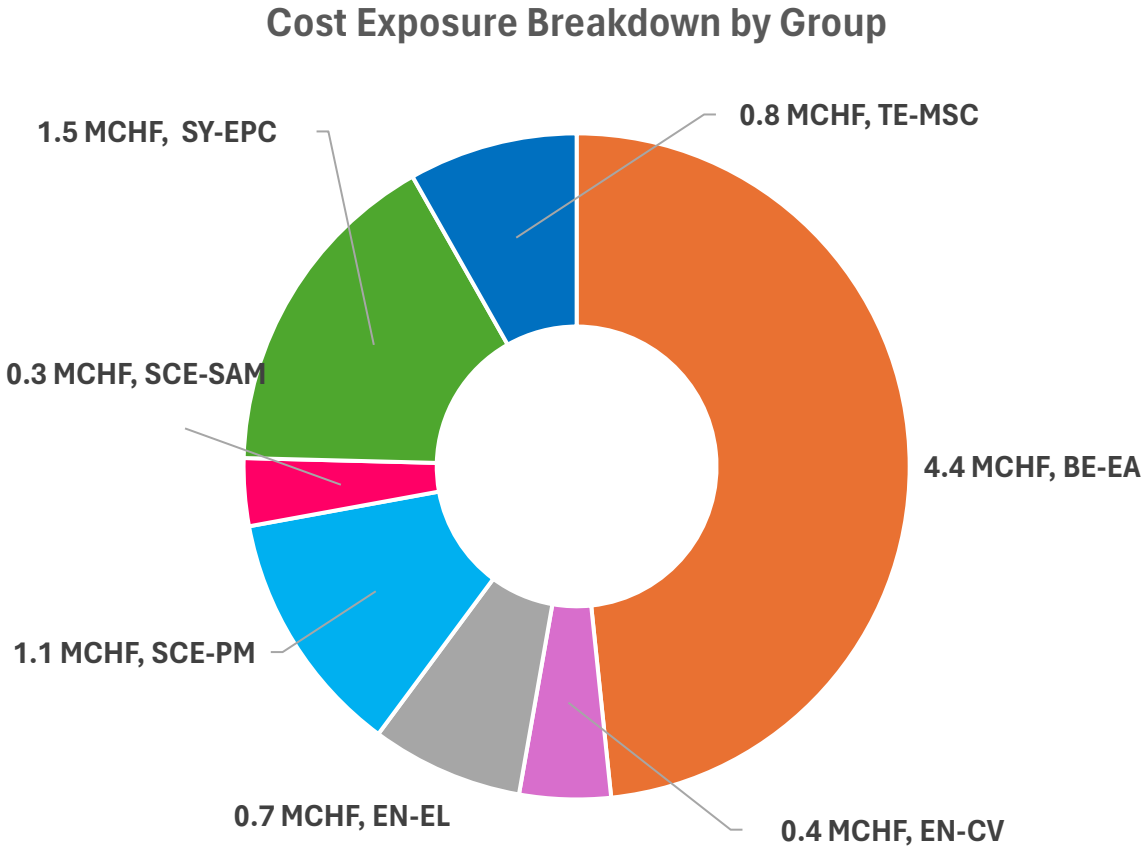
Procurement Progress

Small size contracts	50 kCHF < c < 400 kCHF
Medium size contracts	400 kCHF < c < 1500 kCHF
Large size contracts	c > 1500 kCHF

Procurement activities in 2025/26:

- ✓ In total, 72 contracts >50 kCHF in the Procurement Plan
- ✓ Additional 13 contracts since CSSR'25/MTP25 (~12 MCHF):
  - ✓ 4 contracts removed
  - ✓ 17 contracts added (mainly small size)
- ✓ 52 (+16 since CSSR'25) contracts signed
- ✓ 21 (- 2 since CSSR'25) contracts still to be placed
- ✓ 9.1 MCHF still to be contracted (>8% of the CtC)

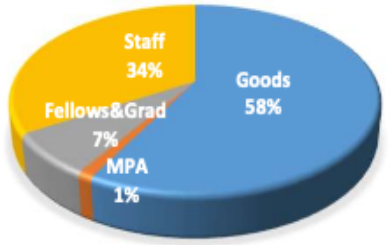




NA-CONS Project Budget (Phase-1)

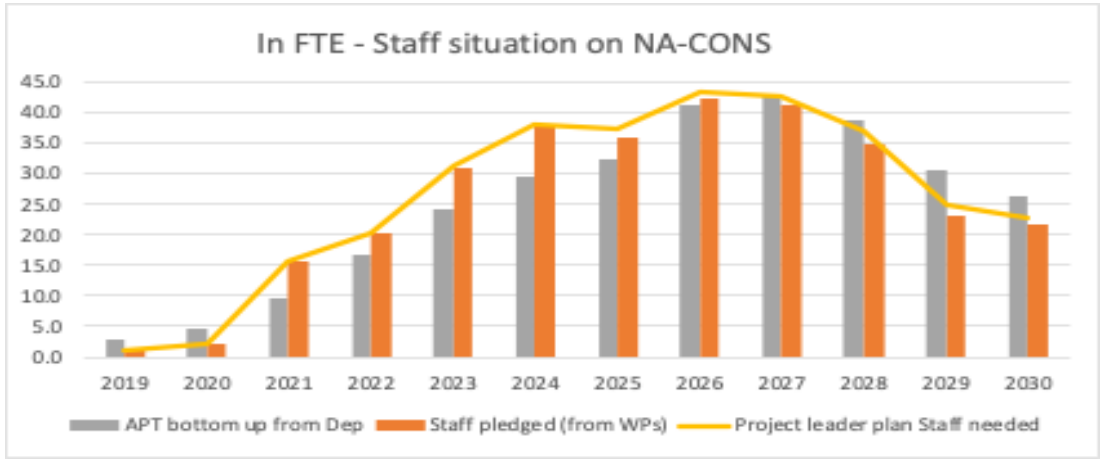
Cost to Completion (P+M) in kCHF 176,521

Goods	102,220
MPA	2,013
Fellows&Grad	12,748
Staff	59,540
	176,521



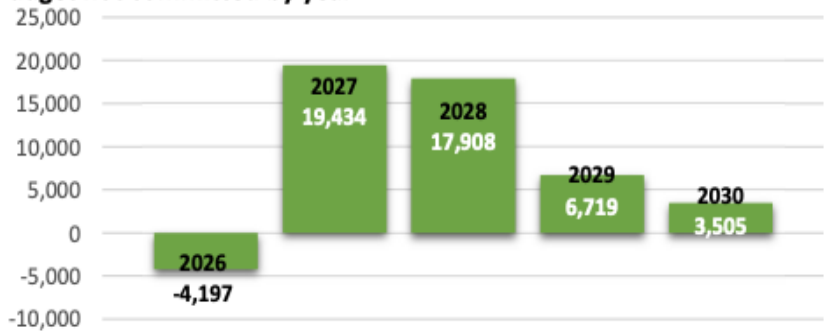
Personnel Budget in FTE 303.1 in kCHF 59,540

CET data up to 2025
APT target figures from 2026

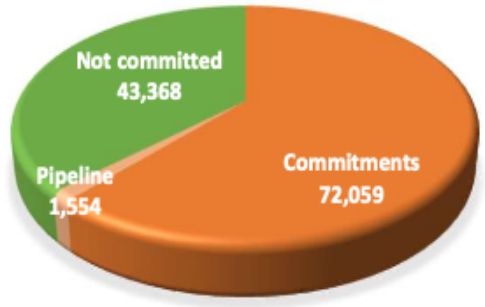


Material Budget in kCHF 116,981

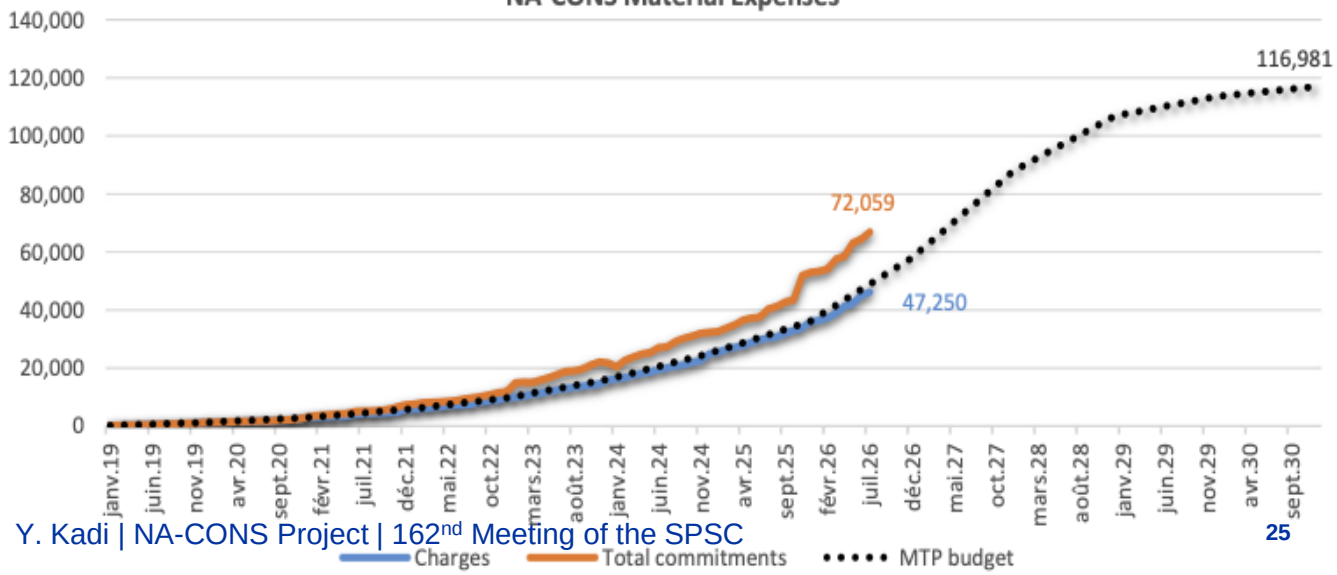
Budget not committed by year



Budget usage



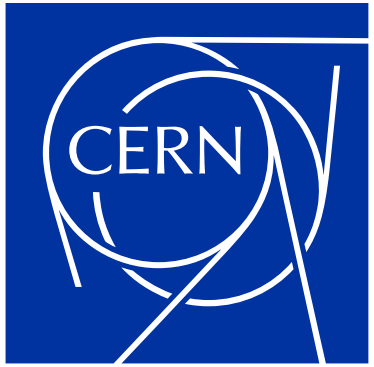
NA-CONS Material Expenses



SUMMARY

- ✓ NA-CONS is well on track and shows high level of readiness for LS3 and RUN4
- ✓ All planned activities fit into the timeframe of the CERN accelerator schedule …
- ⚠ … but little to no margin for BA80 and TCC2
- ✓ WDP and DIMR preparation near completion
- ✓ Identified issues (rad-hard cables, underrated DC cables) addressed by MTP'26
- ✓ Technical Coordination continues to address the few remaining uncertainties and questions
- ✓ Radioactive storage needs fully addressed by LS3C TF
- ✓ Radioactive waste handling being addressed by NA-CONS/HSE-RP TF

⚠ 1 week into LS3 => 156 to go !!!



A big thank you to all the NA-CONS project members and CERN groups for their major contributions and great collaboration

https://cern.ch/be-dep-ea