



# The North-Area Consolidation project and its impact on physics in CERN's North Area

Y. Kadi, Physics at AMBER Int. Workshop, PAW'24, 20 March 2024

# Overview

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## ❑ Project Roadmap until LS4

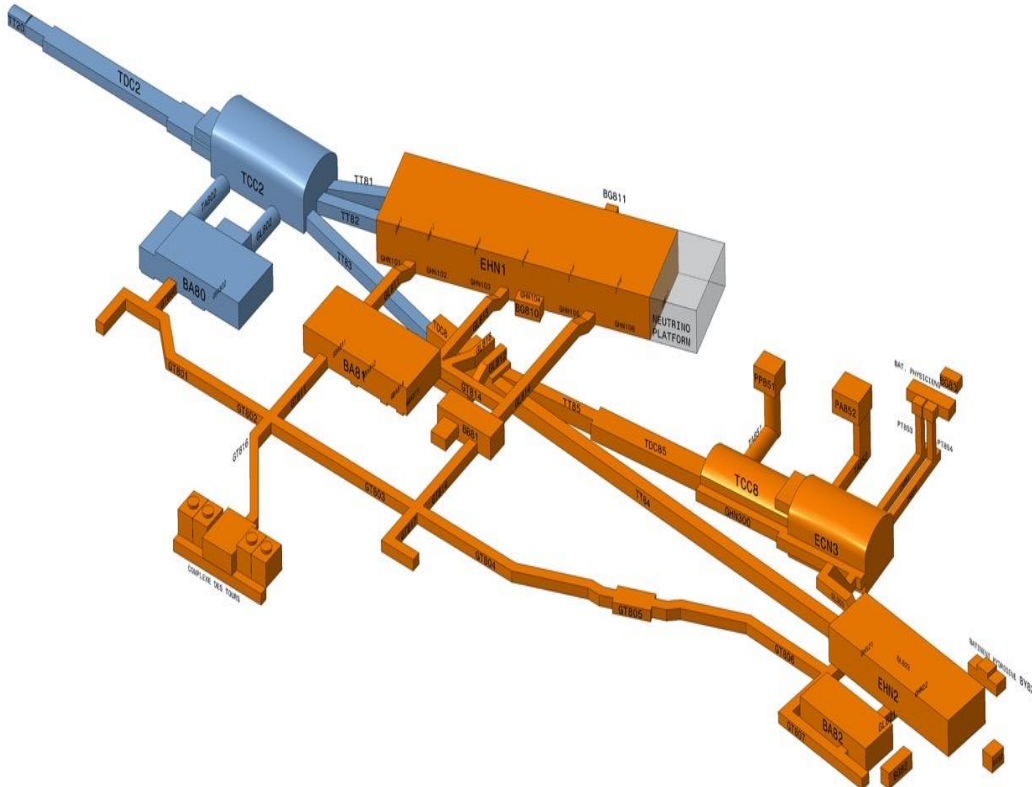
- Scope modification following CSSR'23
- Impact on Physics

## ❑ Project Status:

- EVM KPIs, budget situation, Procurement Plan
- 2023 Operation
- YETS/EYETS Planning & LS3 readiness

## ❑ Summary

## Consolidation Phase 1: 2019 – 2028: primary areas (incl. BA2), BA80 & beamlines towards EHN1 & TDC8



Pre-Phase I		Phase I					Phase II							
LS2		Run 3					LS3		Run 4			LS4		
2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Power Converter Consolidation study</b>		<b>Power Converters in BA80:</b> <ul style="list-style-type: none"> <li>PC &amp; E.E. for vertex1&amp;2 + H8 Morpurgo (YETS 21/22)</li> <li>50% of the power converters</li> <li>50% of availability recovered (TT20, TDC2, start of NA)</li> </ul>								<b>Power Converters BA81 &amp; BA82:</b> <ul style="list-style-type: none"> <li>50% of the power converters</li> <li>100% of availability recovered</li> </ul>				
<b>Beam Instrum:</b> review & analysis Crates consolidation Electrical non-conformities		<b>Beam Instrumentation:</b> 60% of consolidation								<b>Consolidation &amp; Upgrade for higher intensity:</b> remaining 40%				
<b>Civil Eng.:</b> roof of gas barracks BA gate doors		<b>Civil Engineering:</b> BA80, 5 <sup>th</sup> cell for CT2 Light repairs elsewhere								<b>Civil Eng.:</b> EHN1, EHN2, ECN3, BA81, BA82				
<b>Tech.Services:</b> CT2, cooling plant, Chilled water piping, Irrad cables TDC2, Lift for TCC8		<b>Technical Services:</b> EL: BA80, TDC2, TCC2, UPS, secured network CV: underg. ventil, chilled water, cooling station, CT2, new cooling station for converters in BA80								<b>Technical Services:</b> EL: BA81, BA82, EHN1, EHN2, ECN3 CV: ventil. surf bldg., primary pumps circuits, new cooling station in BA81 and 82 (for PC) CRG: centrifugal helium pumps				
<b>Safety:</b> Gas network, Gas detection, ATEX ventil. SUSI 918, EHN2 video ECN3, EHN2		<b>Safety (95%):</b> <ul style="list-style-type: none"> <li>Underground &amp; Surface Fire detection &amp; Alarm.</li> <li>Fire detection in false floors BA80</li> <li>Sprinklers underground (shafts)</li> <li>Fire detection EHN2 galleries</li> <li>Pilot test for new access control system</li> </ul>								<b>Safety (remaining 5%):</b> <ul style="list-style-type: none"> <li>Fire detection in ventilation and in false floors for BA81 &amp; BA82</li> <li>Access system deployment</li> </ul>				

## Consolidation Phase 2: 2029 – 2034: BA81, BA82, EHN1, EHN2 & associated beamlines

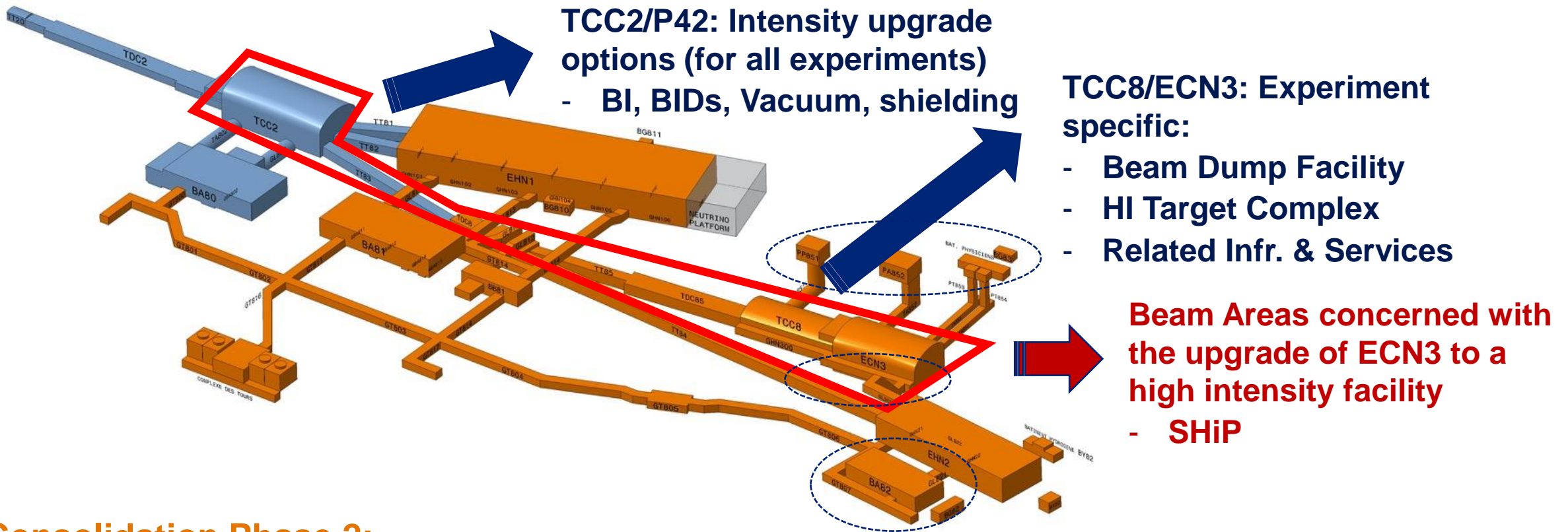
# Experimental Timelines

Category	Exp.	Beam line	Target(s)	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Cons. Requirement	
R&D	HL-LHC, FCC, NA physics, R2E, muon collider, space / satellites	H2	T2																					Reliability and safety of equipment. Stabilise beam uptime. Adapt infrastructures. Consolidate cooling capacity and exp. magnets	
		H4 & GIF++	T2																						
		H6 & CERF	T4																						
		H8	T4																						
Dark Matter and FIPS	NA64-e	H4	T2																					Precise & reliable beam instrumentation. New beam. Increase beam intensity	
	NA64-h	H4/H6/H8	T2/T4																						
	NA64-μ	M2	T6																						
	SHIP	ECN3	T4																						
	<del>SHADOWS</del>	<del>ECN3</del>	<del>T4/T10</del>																						
	MADMAX	H8, w/o beam, YETS	N/A																						
Precision Physics	NA62	K12	T4/T10																					Adapt beam instrumentation and increase beam intensity. Magnet and PC reliability	
	<del>HIKE Phase 1</del>	<del>K12</del>	<del>T4/T10</del>																						
	<del>HIKE Phase 2/3</del>	<del>K12</del>	<del>T4/T10</del>																						
	MUonE	M2	T6																						
	NA63	H4	T2																						
	DsTau	H2	T2																						
QCD	COMPASS	M2	T6																					Increase equipment's reliability and safety, and beam uptime. Adapt beam instrumentation and increase beam intensity.	
	AMBER-antip	M2	T6																						
	AMBER-Rp	M2	T6																						
	AMBER-DYn	M2	T6																						
	AMBER-HI	M2	T6																						
	AMBER-RF	M2	T6																						
	NA61 & NA61++	H2	T2																						
	NA60++	H8	T4																						
Neutrino-related Beams	ProtoDUNE-SP	H4	T2																					Increase reliability, safety, and beam uptime. Consolidate beam instrumentation and stability of power supplies	
	ProtoDUNE-VD	H2	T2																						
	ENUBET & NuTAG	TCC2/SPS?	tbc																						
	NA61 low energy	H2	T2																						
	DsTau	H2/H4	T2																						

# NA-CONS -> ECN3 Intensity Upgrade

## Consolidation Phase 1:

2019 – 2028: primary areas (incl. BA2), BA80 & beamlines towards EHN1 & TDC8



## Consolidation Phase 2:

2029 – 2034: BA81, BA82, EHN1, EHN2 & associated beamlines

# Approved Requests from Modified Scope – MTP 2023

## Beam Delivery:

- Power Converters
- Magnets & Interlock

## Beamline Engineering:

- Beam Instrumentation
- Beam Intercepting Devices
- Survey & Alignment

## Infrastructure & Services

## Safety

Doc	Group	WBS	Type	Description	WU holder	Budget code	Category	2023	2024	2025	2026	2027	2028	Total
BE	BE-EA	NA 1.1(LV)	New reques	NA-CONS Contingency	yacine.kadi@cern.ch	63307	Material	48	371	328	392	424	224	1,787
TE	TE-MS	NA 2.2.1	New reques	Beamline magnets - Spares TT20	philip.schwarz@cern.ch	99177	Material	45	45	0	0	0	0	90
TE	TE-MPI	NA 2.3.1	New reques	Consolidation of the Warm Magnet Interlock Controllers for TT20	richard.mompo@cern.ch	98451	Material	0	0	0	67	67	17	150
SY	SY-BI	NA 3.1.2	Extra cost	Additional twelve months for FSU working on XBPF and RadHar	Jocelyn.Tan@cern.ch	64313	Material	0	0	0	40	40	0	80
BE	BE-EA	NA 3.2.2	New reques	XCBV Consolidation	giulia.romagnoli@cern.ch	63308	Material	25	8	0	0	0	0	33
BE	BE-EA	NA 3.2.2	New reques	XTCX Spare and Design	giulia.romagnoli@cern.ch	63308	Material	0	29	0	0	0	0	29
SY	SY-STI	NA 3.2.3	New reques	Consolidation of T2, T4 and T6 Target Stations (SY-STI) part 78	ean-louis.grenard@cern.ch	63310	Material	33	130	222	479	239	100	1,203
BE	BE-CEM	NA 3.2.4	New reques	Collimators 2 jaws Mechatronics, 12 devices (Phase 1)	mario.di.castro@cern.ch	63720	Material	0	5	5	0	0	0	10
BE	BE-CEM	NA 3.2.4	New reques	Collimator XCBV (Phase 1), 2 devices + upgrade 2 devices	mario.di.castro@cern.ch	63720	Material	10	10	10	10	10	0	50
BE	BE-CEM	NA 3.2.4	New reques	Collimator XTCX	mario.di.castro@cern.ch	63720	Material	0	0	5	0	0	0	5
BE	BE-CEM	NA 3.2.4	New reques	Collimators 4 jaws Mechatronics, 9 devices (Phase 1)	mario.di.castro@cern.ch	63720	Material	0	0	10	15	0	0	25
BE	BE-CEM	NA 3.2.4	New reques	Collimator Magnetic XCMV/H Mechatronics (Phase 1), 11 devices	mario.di.castro@cern.ch	63720	Material	0	0	5	35	2	0	42
BE	BE-EA	NA 3.3.2	New reques	VXSS chambers consolidation	antonio.lafuente@cern.ch	89316	Material	170	0	0	0	0	0	170
BE	BE-EA	NA 3.2.2	Extra cost	Magnetic Collimators XCMH-XCMV	giulia.romagnoli@cern.ch	63308	Material	83	0	0	0	0	0	83
BE	BE-EA	NA 3.3.2	Rescoping	Procurement & de-installation/ installation of cables NG18 entre	antonio.lafuente@cern.ch	89316	Material	0	0	0	12	12	12	36
BE	BE-EA	NA 3.3.2	Rescoping	Procurement & installation of new electrovalves outside 1LLZ	antonio.lafuente@cern.ch	89316	Material	0	0	7	43	43	34	127
BE	BE-EA	NA 3.4	Extra cost	XSPL actuation and the mechanical transmission	antonio.lafuente@cern.ch	89321	Material	5	5	10	10	10	0	40
BE	BE-EA	NA 3.2.2	Extra cost	2-Blocks Collimators (Phase 1)	giulia.romagnoli@cern.ch	63308	Material	0	25	25	0	0	0	50
BE	BE-EA	NA 6.2(LV)	Extra cost	Integration of beam lines and associated infrastructure	michael.lazzaroni@cern.ch	89317	Material	0	0	23	23	0	0	46
EN	EN-CV	NA 4.4.5	Extra cost	Upgrade of Chilled Water Distribution extra need (EHN1)	jani.lehtinen@cern.ch	53610	Material	55	520	0	0	0	0	575
EN	EN-EL	NA 4.5.2	PENDING EI	BA80 Stable Network Consolidation	va.cano.gonzalez@cern.c	54196	Material	15	11	388	772	305	0	1,491
EN	EN-EL	NA 4.5.2	PENDING EI	TTs Stable Network Consolidation	va.cano.gonzalez@cern.c	54196	Material	0	0	0	777	0	0	777
EN	EN-EL	NA 4.5.4	PENDING EI	Secured Network Consolidation	va.cano.gonzalez@cern.c	54185	Material	0	1,198	1,483	212	0	0	2,893
EN	EN-EL	NA 4.5.5	PENDING EI	AUG consolidation	va.cano.gonzalez@cern.c	54197	Material	0	0	0	0	160	0	160
EN	EN-EL	NA 4.5.5	PENDING EI	SCADA consolidation	va.cano.gonzalez@cern.c	54197	Material	0	0	0	189	133	0	322
EN	EN-EL	NA 4.5.5	PENDING EI	UPS consolidation	va.cano.gonzalez@cern.c	54197	Material	0	0	0	542	120	0	661
EN	EN-EL	NA 4.5.7	New reques	DC Cabling Consolidation	guillaume.gros@cern.ch	54178	Material	0	0	0	0	609	0	609
EN	EN-EL	NA 4.5.8	New reques	Fibre Optics Infrastructure - Phase 1	jeremy.blanc@cern.ch	54179	Material	0	0	39	53	0	0	91
EN	EN-EL	NA 4.5.9	New reques	Fibre Optics DDFRS system - TT81/TT82/TT83	diego.di.francesca@cern.c	54172	Material	0	0	0	120	35	0	155
TE	TE-CRC	NA 4.6(LV)	New reques	Control rack for Piston compressors	thomas.barbe@cern.ch	99571	Material	0	0	0	0	0	0	0
IT	IT-CS	NA 4.8(LV)	New reques	Rack relocation in BA80	marlysa.da.costa@cern.ch	47439	Material	0	0	0	23	23	0	45

Doc	Group	WBS	Type	Description	WU holder	Budget code	Category	2023	2024	2025	2026	2027	2028	Total
SY	SY-BI	NA 3.1.2	Extra cost	Six months extension for Fellow working on XBPF and RadHar	Jocelyn.Tan@cern.ch	64313	Quest	0	50	0	0	0	0	50
SY	SY-BI	NA 3.1.2	New reques	Request for technical student 1MY for prototype validation and	Jocelyn.Tan@cern.ch	64313	MPA	14	28	0	0	0	0	42
SY	SY-STI	NA 3.2.3	New reques	Consolidation of T2, T4 and T6 Target Stations (SY-STI) part	ean-louis.grenard@cern.ch	63310	Origin	0	50	75	75	25	0	225
BE	BE-CEM	NA 3.2.4	New reques	BIDs Controls and monitoring Resources	mario.di.castro@cern.ch	63720	Origin	0	0	40	155	155	115	465
BE	BE-CEM	NA 3.2.4	New reques	BIDs Controls and monitoring Resources	mario.di.castro@cern.ch	63720	MPA	0	0	0	0	46	0	46
SCE	SCE-S/	NA 5.1.3	New reques	Fire Doors Personnel support	adem.kaymak@cern.ch	76386	Quest	0	0	0	50	50	0	100
EN	EN-AA	NA 5.1.5	New reques	Fire Detection & Alarms & Sprinklers Underground	anna.suwalska@cern.ch	72590	Quest	0	30	100	100	70	0	300
<b>Total</b>								<b>14</b>	<b>158</b>	<b>215</b>	<b>380</b>	<b>346</b>	<b>115</b>	<b>1,228</b>
SY	SY-EP	NA 2.1.1	Extra cost	POLARIS - Pre-series Components - FSU	ivan.josifovic@cern.ch	68312	Material	45	45	0	0	0	0	90
SY	SY-EP	NA 2.1.1	Extra cost	POLARIS - Pre-series Converters - FSU	ivan.josifovic@cern.ch	68312	Material	0	0	45	0	0	0	45
SY	SY-EP	NA 2.1.1	Extra cost	POLARIS - Series Components - FSU	ivan.josifovic@cern.ch	68312	Material	0	0	45	45	0	0	90
SY	SY-EP	NA 2.1.1	Extra cost	POLARIS - Series Converters - FSU	ivan.josifovic@cern.ch	68312	Material	0	0	0	180	0	0	180
SY	SY-EP	NA 2.1.1	Extra cost	POLARIS - Installation and Commissioning - FSU	yves.gaillard@cern.ch	68312	Material	0	0	0	0	180	180	360
SY	SY-EP	NA 2.1.1	Extra cost	BOREAL - Installation and Commissioning - FSU	yves.gaillard@cern.ch	68313	Material	0	0	0	0	90	90	180
SY	SY-EP	NA 2.1.1	Extra cost	NEPTUNE - Installation and Commissioning - FSU	L. De Oliveira	68314	Material	0	0	0	0	90	0	90
<b>Total</b>								<b>876</b>	<b>3,263</b>	<b>3,625</b>	<b>5,954</b>	<b>4,545</b>	<b>509</b>	<b>18,770</b>

# Impact of HI-ECN3 on NA-CONS Systems

ALL activities										
WU status	(All)									
WBS	WBS 2	WU description	Budget code	Sum of 2023	Sum of 2024	Sum of 2025	Sum of 2026	Sum of 2027	Sum of 2028	Sum of Grand Total
⊖ NA 2	⊖ NA 2.2	⊖ NA-CONS-HI Beamline magnets - Manpower FSU - Phase I	99192	75	75	75	75	75	75	450
		⊖ NA-CONS-HI Beamline magnets - Spares NA (excl. TT20) - Phase I	99192	0	0	45	45	45	45	180
		⊖ NA-CONS-HI Magnetic field measurements - Manpower FSU	99179	30	70	0	0	0	0	100
	⊖ NA 2.3	⊖ NA-CONS-HI Consolidation of the Beam Interlock System for TT20, TDC2 and BA80: additional request	99170	0	90	180	80	80	20	450
<b>NA 2 Total</b>				<b>105</b>	<b>235</b>	<b>300</b>	<b>200</b>	<b>200</b>	<b>140</b>	<b>1'180</b>
⊖ NA 3	⊖ NA 3.1	⊖ NA-CONS-HI 3 New SEM grids in TT20-TT25 lines	64331	0	10	43	78	78	0	210
		⊖ NA-CONS-HI SEM Grids Electronics production	64331	33	57	0	0	0	0	90
		⊖ NA-CONS-HI Additional manpower for SEMs	64331	0	80	80	100	200	100	560
		⊖ NA-CONS-HI BLM (TT23, TT24 & TT25) = 13 new units	64332	0	19	43	43	43	0	149
		⊖ NA-CONS-HI Long. BLM production of 3 operational detectors: 1 TDC2 and 2 TCC2	64332	0	0	51	51	51	51	204
		⊖ NA-CONS-HI Additional manpower for BLMs	64332	0	0	0	100	100	0	200
	⊖ NA 3.2	⊖ NA-CONS-HI Consolidation of TCSCs	63304	0	0	0	0	155	155	310
		⊖ NA-CONS-HI Consolidation of TCSCs - Graduates	63304	0	100	100	100	10	0	310
		⊖ NA-CONS-HI New TBIU/D CONS : replacement of halo detector by SEM grids in T2, T4 and T6 (3 units only)	63305	0	0	125	125	0	0	250
<b>NA 3 Total</b>				<b>33</b>	<b>266</b>	<b>443</b>	<b>598</b>	<b>637</b>	<b>306</b>	<b>2'283</b>
⊖ NA 4	⊖ NA 4.5	⊖ NA-CONS-HI Fibre Optics Manpower - Phase 1 (additional)	53772	0	20	20	20	20	0	81
<b>NA 4 Total</b>				<b>0</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>0</b>	<b>81</b>
⊖ NA 5	⊖ NA 5.2	⊖ NA-CONS-HI Operational RP support and studies	57492	0	50	97	97	56	0	300
<b>NA 5 Total</b>				<b>0</b>	<b>50</b>	<b>97</b>	<b>97</b>	<b>56</b>	<b>0</b>	<b>300</b>
⊖ NA 6	⊖ NA 6.2	⊖ NA-CONS-HI TCC2 Integration Study	89324	8	42	56	6	6	0	118
	⊖ NA 6.5	⊖ NA-CONS-HI Survey and Alignment Ph1	61579	35	36	200	180	199	120	770
<b>NA 6 Total</b>				<b>43</b>	<b>78</b>	<b>256</b>	<b>186</b>	<b>205</b>	<b>120</b>	<b>888</b>
<b>Grand Total</b>				<b>182</b>	<b>649</b>	<b>1'115</b>	<b>1'101</b>	<b>1'119</b>	<b>566</b>	<b>4'732</b>

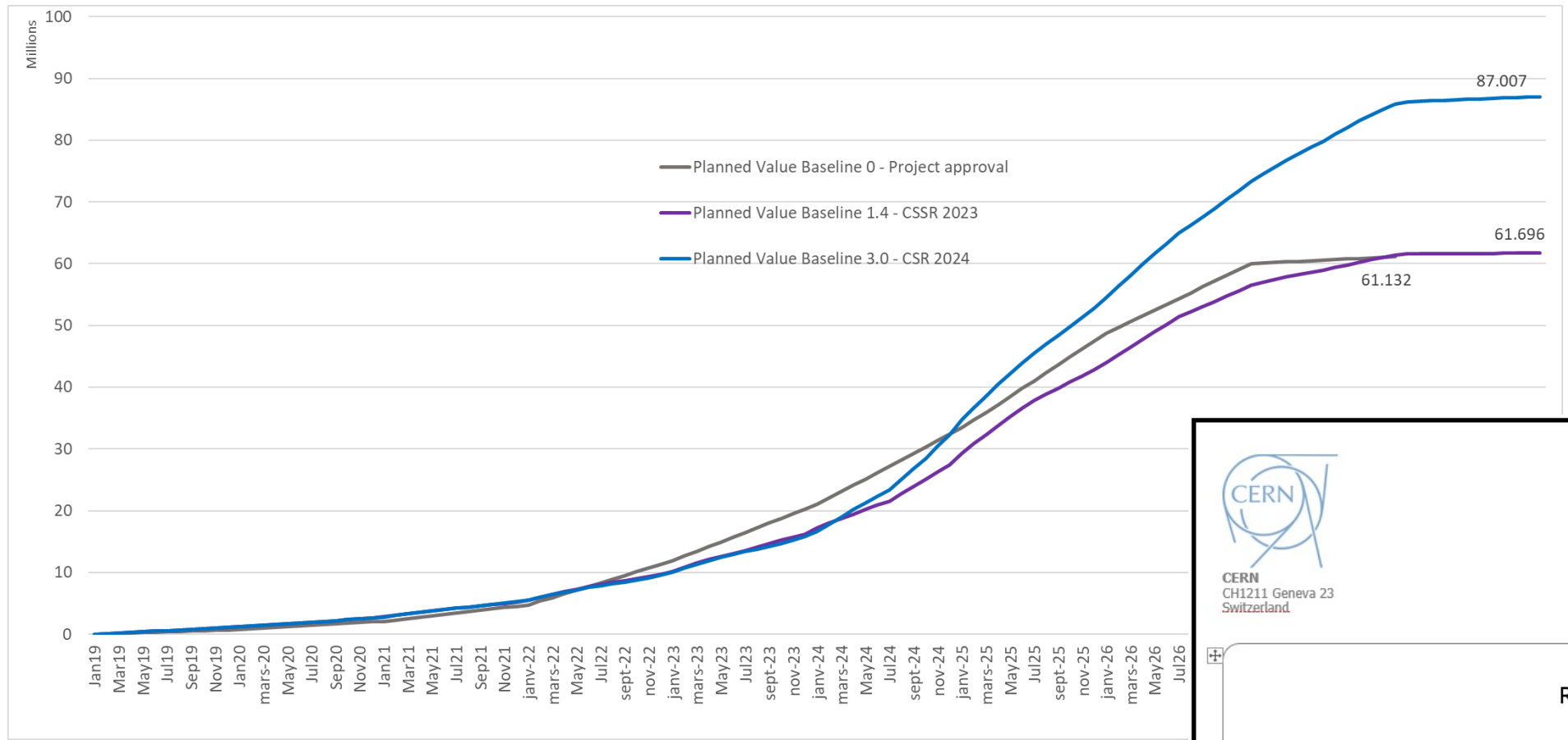
# NA-CONS Phase 2


No	Classification for MTP document	Sector/Unit	Department	sub-PPA	Project Name/ Operation	Type of Budget	Request short description	Request Justification / Comments	Dep's Priority	Internal Request Status (Approved by)	Contact People	Reference / Documentation	Already requested in MTP 2022 and not approved	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Total 2023 - 2033 [kCHF]	Total 2023 - 2028 [kCHF]	Total 2024 - 2033 [kCHF]	Total 2024 - 2028 [kCHF]	Total 2023-2024 [kCHF]	
1	MTP Funding Request	ATS	BE	ACS-NA	NA-CONS	Materials	NA-CONS Phase 1	Bottom up from the CSSR 2023 -> 54.9MCHF. After prioritization and optimization: -15.7MCHF for HI-ECN3 (included in HI-ECN3 MTP request), -20.3MCHF postponed post LS3 (included in NA-CONS Phase2 MTP request) =17.7 MCHF (6.3MCHF for EL-CONS + 3.2MCHF for extra cost + 8.2MCHF for new requests) + 1.2MCHF included in the NA-CONS Phase 1 Grad MTP request)			Yacine Kadi	CSSR presentation available		876	4'263	2'625	5'954	4'545	509							18772	18772	17896	17896	5139
2	MTP Funding Request	ATS	BE	ACS-NA	NA-CONS	Grad	NA-CONS Phase 1	See comment on MTP request NA-CONS Phase 1 Materials			Yacine Kadi	CSSR presentation available		14	158	215	380	346	115							1228	1228	1214	1214	172
4	MTP Funding Request	ATS	BE	ACS-NA	NA-CONS	Materials	NA-CONS Phase 2	Bottom up from the PAR 2021. The NA-CONS Phase 2 extending up to LS4 is mandatory to address all issues and reap the full benefits of the NA consolidation and ECN3 upgrade program. Including EL-CONS Phase 2 (NA Stable network 10MCHF)			Yacine Kadi									1'600	4'000	8'000	16'800	20'000	29'600	80000	1600	80000	1600	0

Initial budget allocation of 65 MCHF approved at MTP 2023  
 Scope & Schedule to be reviewed next CSR in 2025



# Baseline evolution – Phase 1





CERN  
CH1211 Geneva 23  
Switzerland.

EDMS NO. <b>3024442</b>	REV. <b>0.1</b>	VALIDITY <b>DRAFT</b>
REFERENCE <b>FAP-RPC</b>		

Date: 2024-02-01

Report

**North Area Consolidation (NA-CONS)**

**Evolution of Baselines in EVM**

# Overview

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## ❑ Project Roadmap until LS4

- Scope modification following CSSR'23
- Impact of HI-ECN3

## ❑ Project Status:

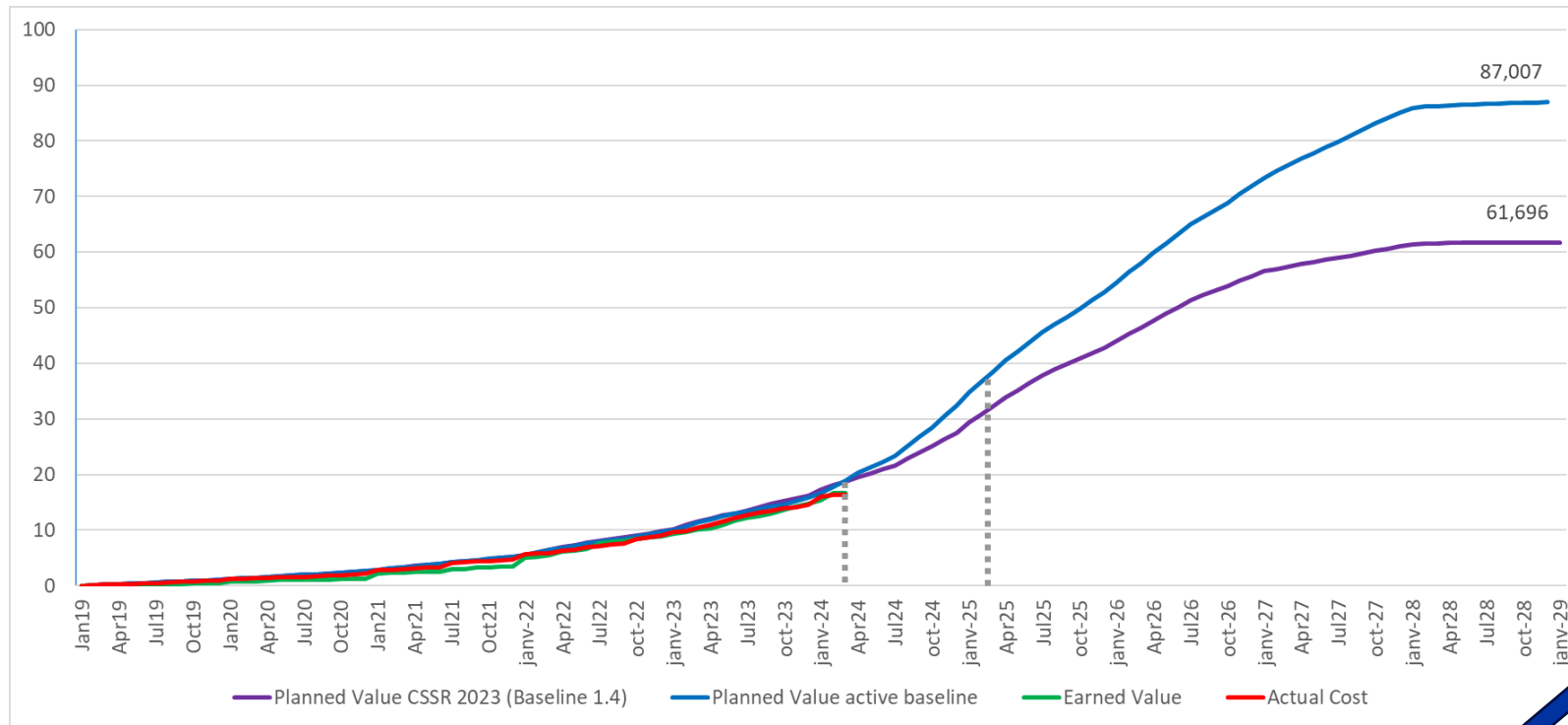
- EVM KPIs, budget situation, Procurement Plan
- 2023 Operation
- YETS/EYETS Planning & LS3 readiness

## ❑ Summary

# Project EVM Situation – Baseline 3.0

Data 01.02.2024 :

PV CSSR 2023	18,034
PV active baseline	17,795
EV	16,624
AC	16,381



Cost variance	Schedule variance	
<i>in kCHF</i>	<i>in kCHF</i>	<i>in month</i>
243	Active baseline	-1,171 -1.1
	CSSR 2023 baseline	-1,410 -1.7

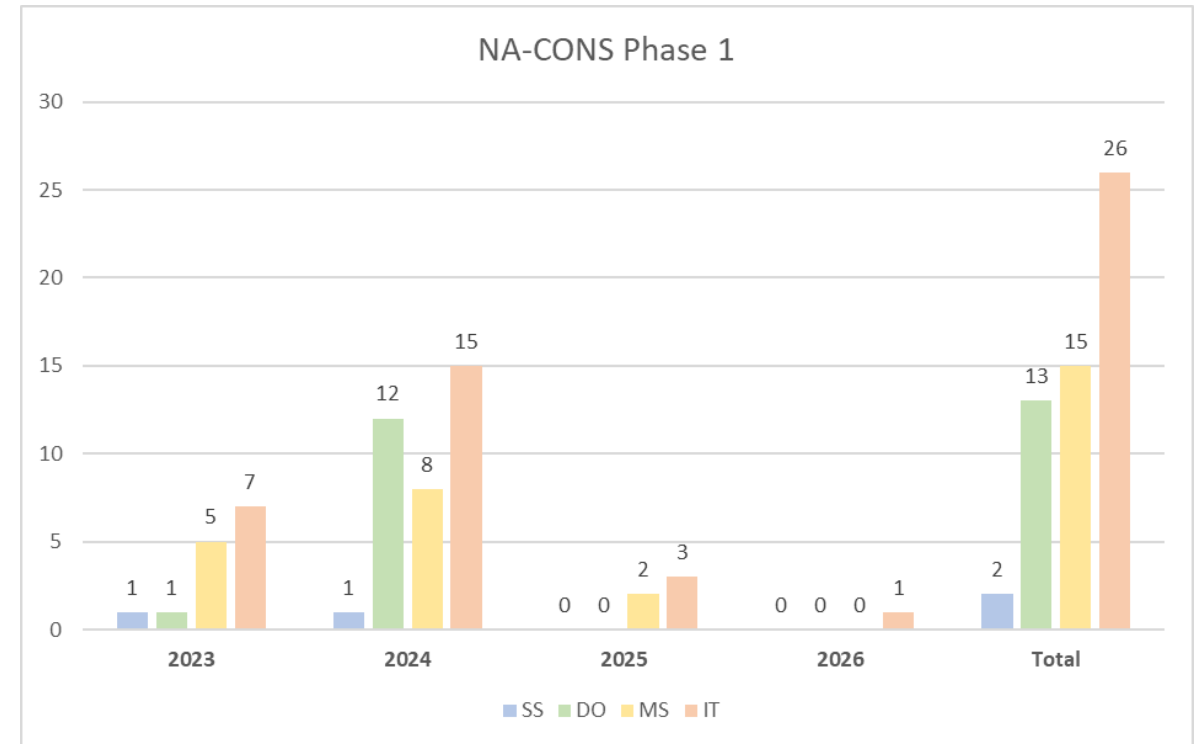
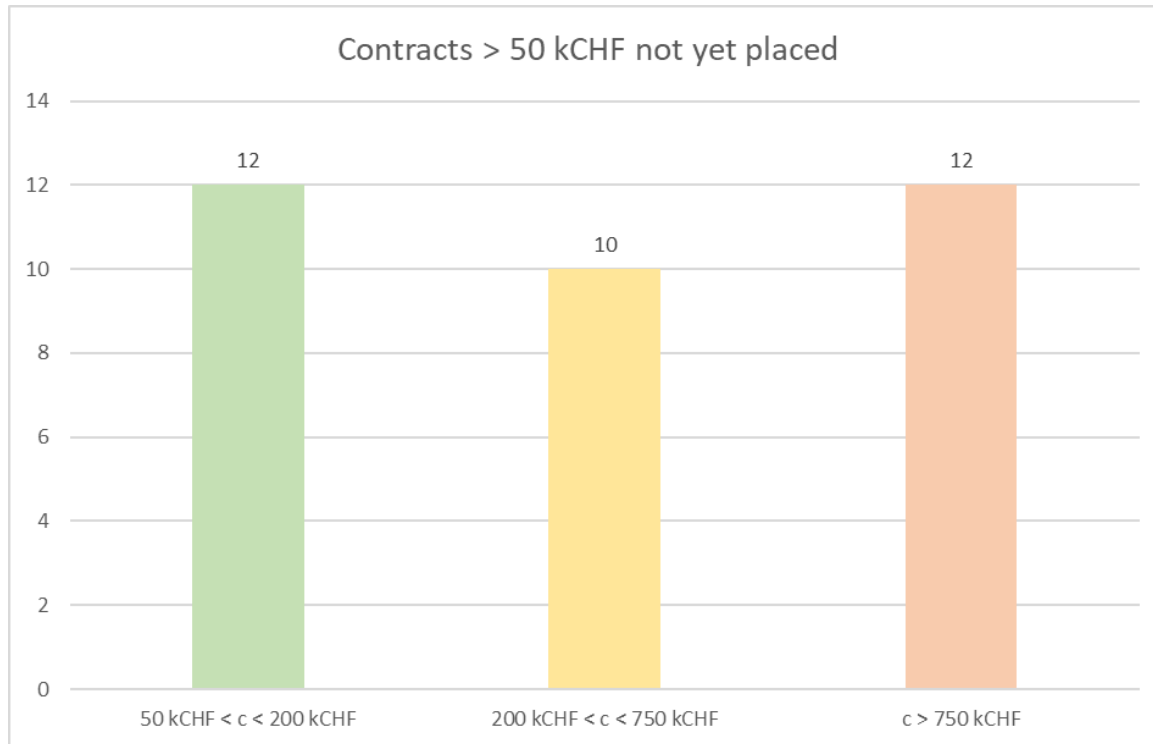
- Power Converters 7.3 MCHF
- EL 2.2 MCHF
- Fire Safety 2.0 MCHF
- BIDs 1.1 MCHF
- Magnets/Interlock 0.8 MCHF
- Beam Instrumentation 0.8 MCHF
- CV 0.5 MCHF
- Others 3.4 MCHF

Metrics per year in kCHF

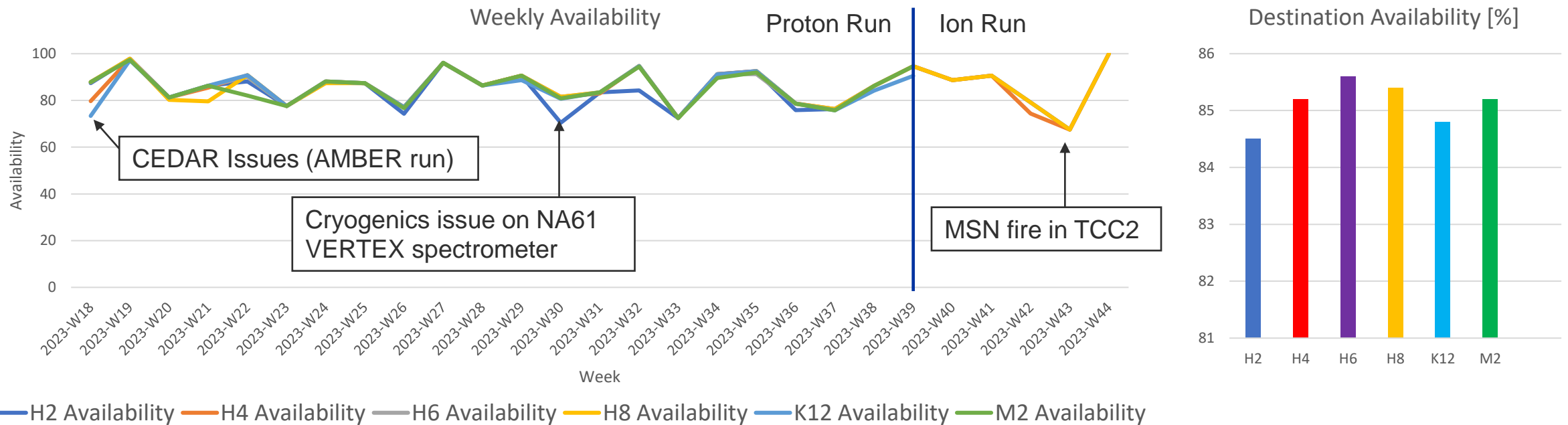
Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
PV	1,187	1,609	2,713	4,543	6,590	18,105	19,784	18,827	12,523	1,126
EV	777	1,364	2,958	4,215	6,033	1,462				
AC	1,181	1,624	2,838	3,980	6,471	296				
PV Trend (Baseline 3.0.0)	1,187	1,609	2,713	4,536	6,594	16,386	21,561	18,797	12,498	1,126

# Procurement Outlook 2024-26

- Intense procurement activities expected for the next 15 months (in competition with HL-LHC!).
- Cases can slightly shift wrt today's baseline scenario.

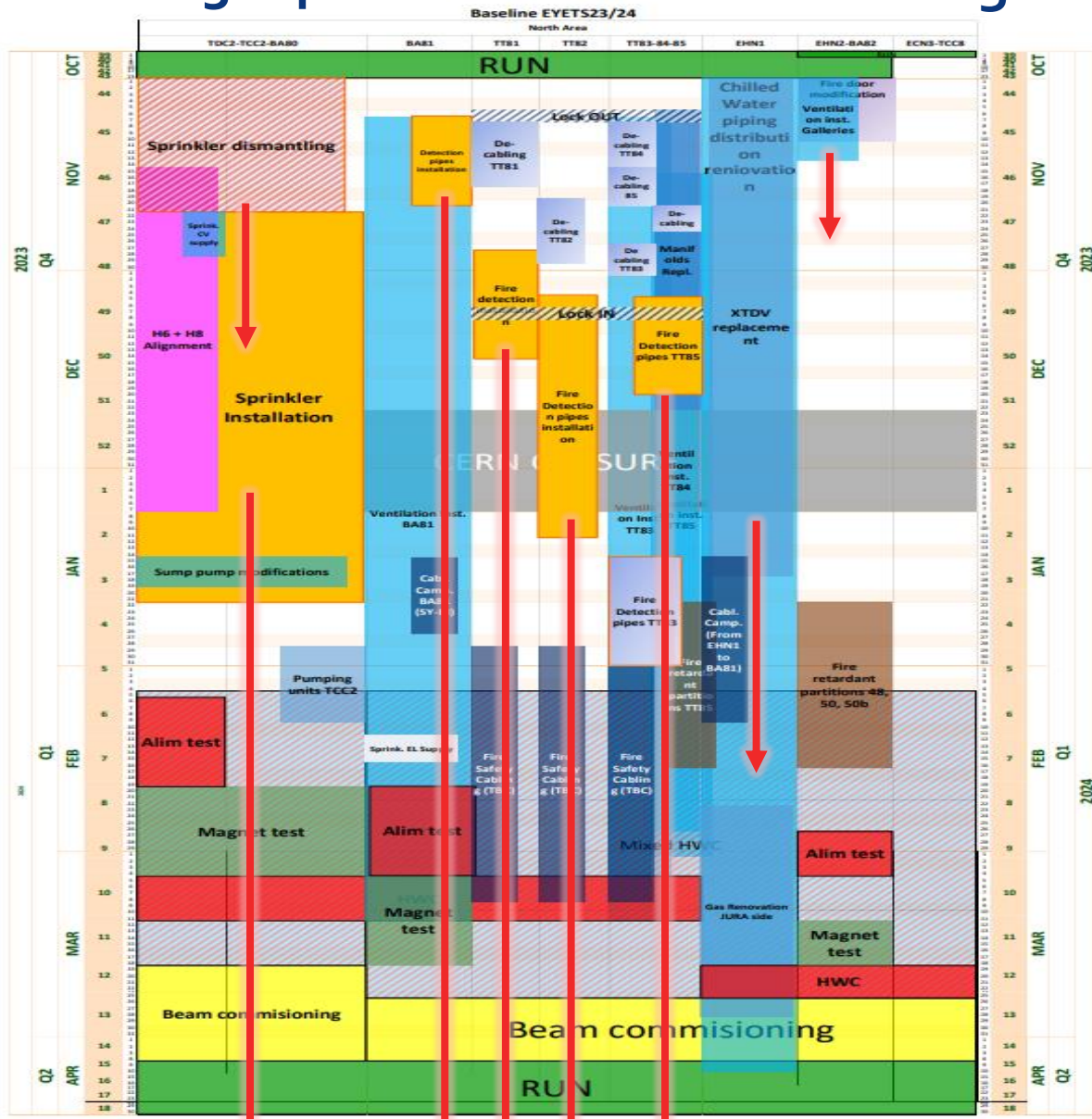


# 2023 Operation



- A **VXSS vacuum chamber** downstream the T4 target was found **obstructing the beam** ahead of operation. Its removal had a profoundly positive impact on long standing issues, such as a better beam spot on the T10 target and restoration of electron beam quality in the H8 and H6 lines.
- The **TOP 3** faults of 2023 were issues with the **CEDAR beam instrumentation**, **cryogenics** operation of the **NA61 VTX** magnets, and a **fire of an MSN magnet** in TCC2.
- A control issue with the **NA power converters** did not cause significant downtime, but clearly impacted operation for weeks and is not yet resolved.

# EYETS23-24 activities – Linear Planning



Red arrows highlight the shift (delays\* (welding, scaffolding, resources availability), re-schedule, postponed) in activities from baseline planning:

## Current status of delayed activities (13.03.24)

### On-going activities:

- Fire retardant partitions – BA81-EHN1 & EHN2/GHN2 → on-going, delayed by 3 weeks for BA81/EHN1, completion foreseen for EHN2/GHN2 → Installation is finished wk10. EN-CV & SCE-SAM – Interlock discussion on-going
- Fire safety cabling → on-going, WSS will check and revert
- Rad-hard proto installation → ongoing, completion foreseen in wk11
- Ventilation underground TT83-TT85 → ongoing, underground works are finished, completion foreseen wk11
- EHN1 Gas extraction EN-CV → began on wk12
- EHN1 chilled water distribution works → ongoing and progressing well more manpower
- Installation of ventilation galleries EHN2/GHN2 → ongoing, commissioning next week 11 without lights (supply issues)

### Critical Activity:

- Fire doors for BA81-EHN1 → delay of 3 weeks, door installed with no insulation, impact to be evaluated, informed Filipa
- Chilled water distribution EHN1 → ongoing, close monitoring, mitigation measures identified with BE-EA physicists

### Completed Activity:

- Fire detection BA81-TT81-TT85 – partial works (electrical components installation)
- Replacement of manifolds TT84
- H6-H8 alignment (to be updated in PLAN)
- DC interconnections
- De-cabling campaign TT81-TT85
- Cabling campaign – BA81—EHN1
- Cabling safety trays installation – BA81-TT81-TT82 zone
- NA supports inspection
- DC cabling samples collection for aging assessment
- Repl. of PLCs & NG18 patch panels
- Fire sprinkler underground BA80 zone – sprinkler is operational now
- Consolidation of pumping units TCC2
- XTDV replacement EHN1
- Collimator consolidation 2 block & 4 block

- DSO tests completed
- BA80 & BA81 zone close → 15.03.24

### Postponed RUN2024/EYETS24/25:

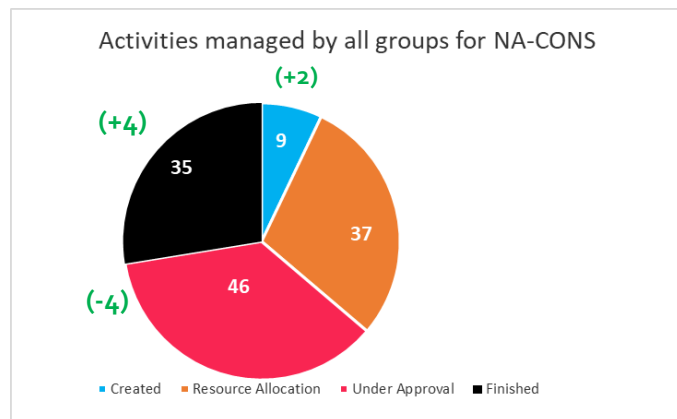
- XTDV 2 tables – EHN1, - partially
- Gas mixing area Jura side EHN1,
- Exchange micro-coll TT82,
- Consolidation of pumping units – BA81-TT83-TT85
- Fire Sprinkler underground installation BA80 – partially
- Fire detection BA81-TT81-85 – partially
- [SURVEY] Failing and non-adapted supporting systems and jacks
- Geodetic and network measurements - extended
- XCBV replacement
- Underground ventilation TT83-TT85 – extended
- PLCs & NG18 patch panels replacement – extended

I. Angulo & F. Pedrosa (EN-ACE)

### Plan Lifecycle of RUN3-LS3 - Version 2



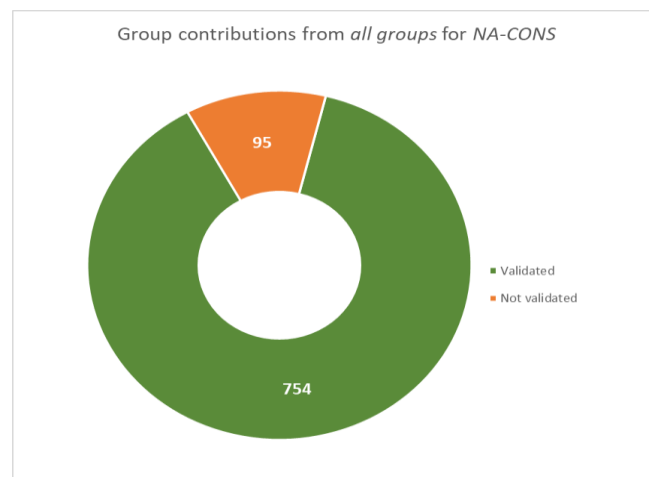
### NA-CONS activities overview for RUN3-LS3



Total number of activities in PLAN: **125**  
 Current activities in PLAN: 94  
 Finished: 31

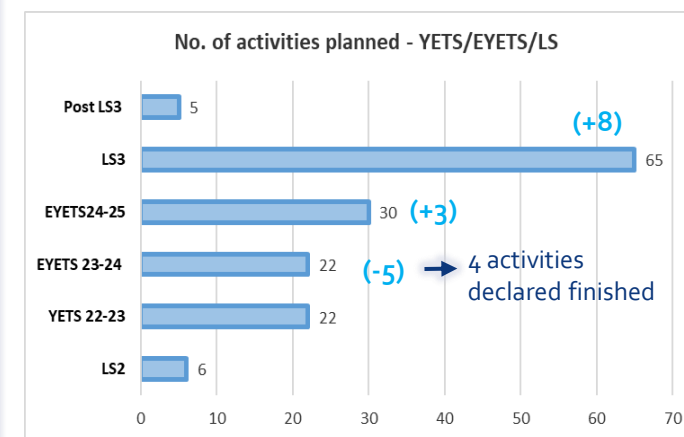
2 new activities created : Awaiting MTP approval  
 Activity 13869 - New XCET gas control systems (10 pieces) consolidation  
 Activity 13868 - New XCET gas panels (10 pieces) consolidation

### Contributions requested for NA-CONS activities RUN3-LS3



Total no. of contributions: **849**  
 Validated contributions: 753(89%)  
 Pending contributions: **95**

### Activities foreseen for EYETS/LS

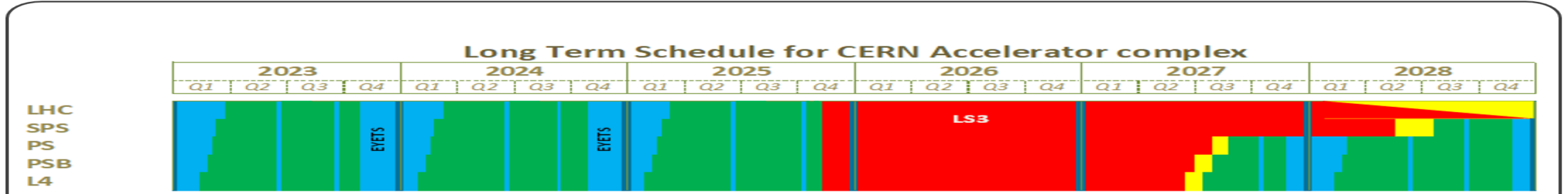


Plots will evolve with updates in the PLAN tool.  
**No. of activities postponed/extended:**  
 YETS22/23 → YETS23/24 : 8  
 EYETS23/24 → EYETS24/25 : 12  
**BE-EA - 7, EN-AA - 1, BE-GM - 2, TE-VSC -1, EN-CV -1**

**Groups to update the status of NA-CONS activities in the PLAN tool version-2 for EYETS23-24.**  
**Further to update in PLAN tool version -3 before the end of the "Initialization" stage (31<sup>st</sup> March 2024)**

Plan : Dashboard (cern.ch)  
<https://plananalytics.web.cern.ch/>

# LS3 Master Schedule



## Key information:

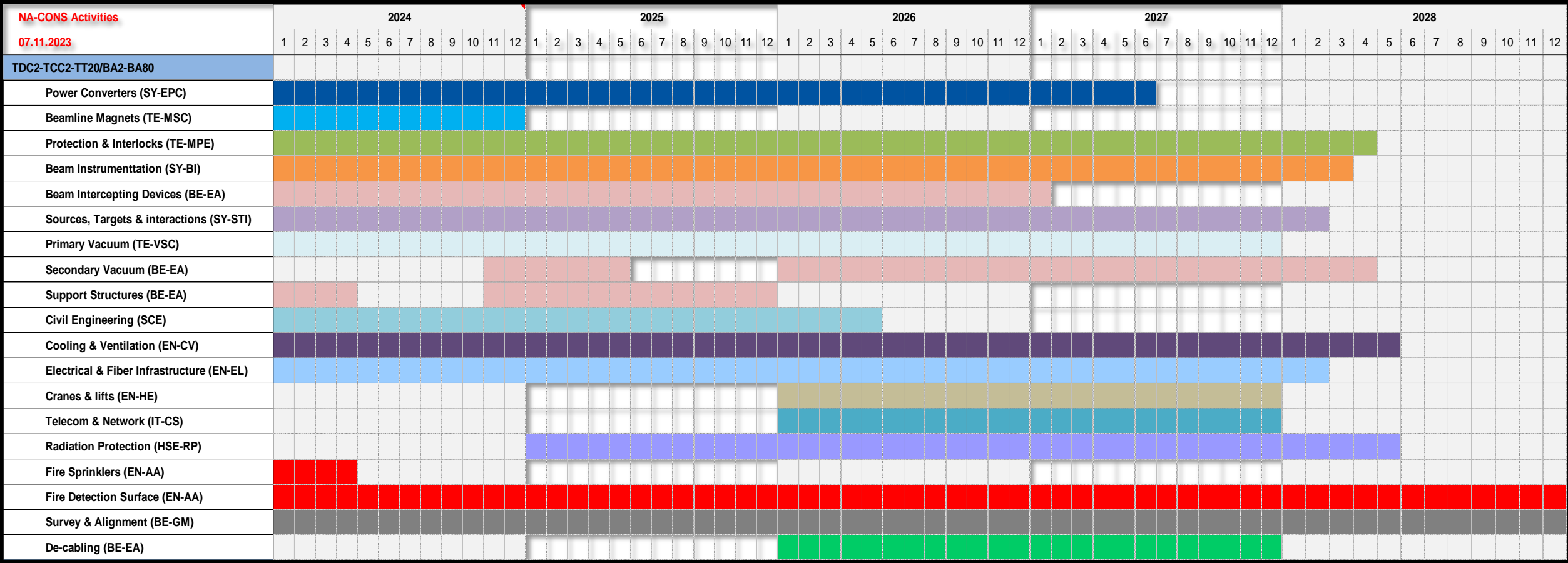
- LS3 start date on 17.11.2025
- SPS LS3 extended to 30 months **for interventions in the SPS i.e. NA-CONS**
- North Area must be ready to receive beam by Q3 2028
- **Note:** There is no margin for major surprises, so everything must be prepared carefully and timely by all involved teams (including contractors)





# LS3 Overview: Zone-wise per systems

## TDC2-TCC2-TT20/BA2-BA80



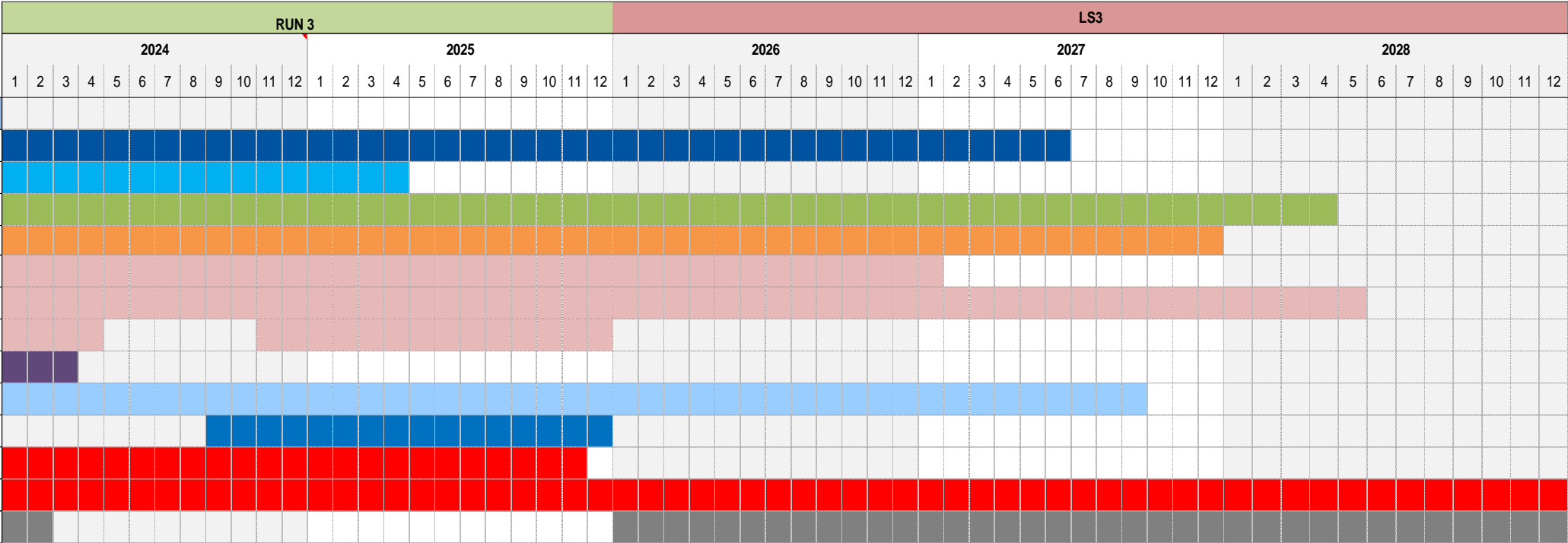
# LS3 Overview: Zone-wise per systems

TT81-TT85-BA81

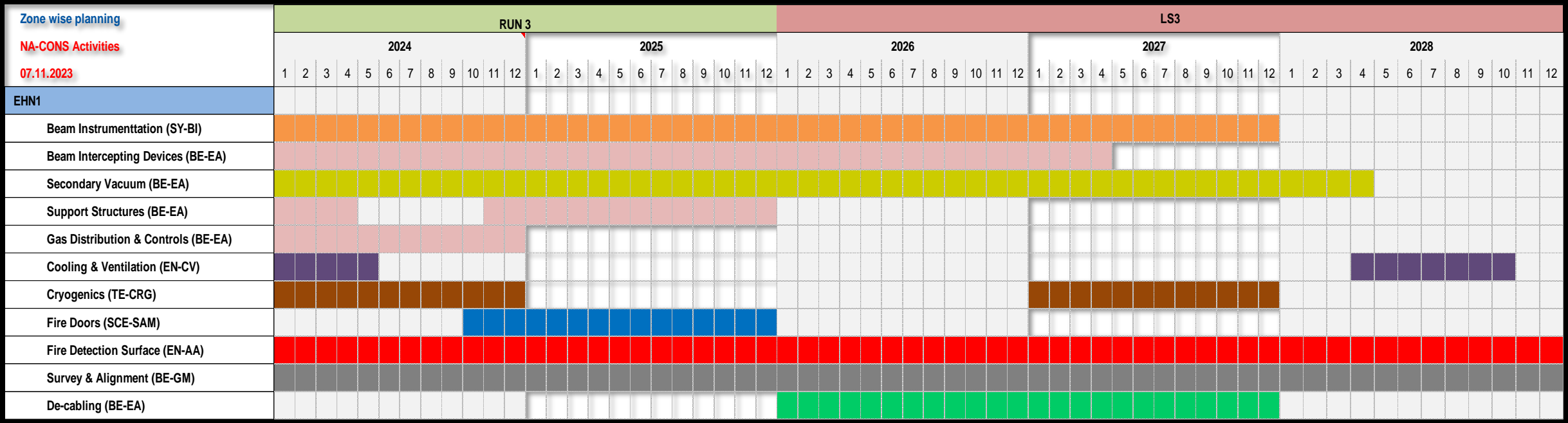
Zone wise planning

NA-CONS Activities

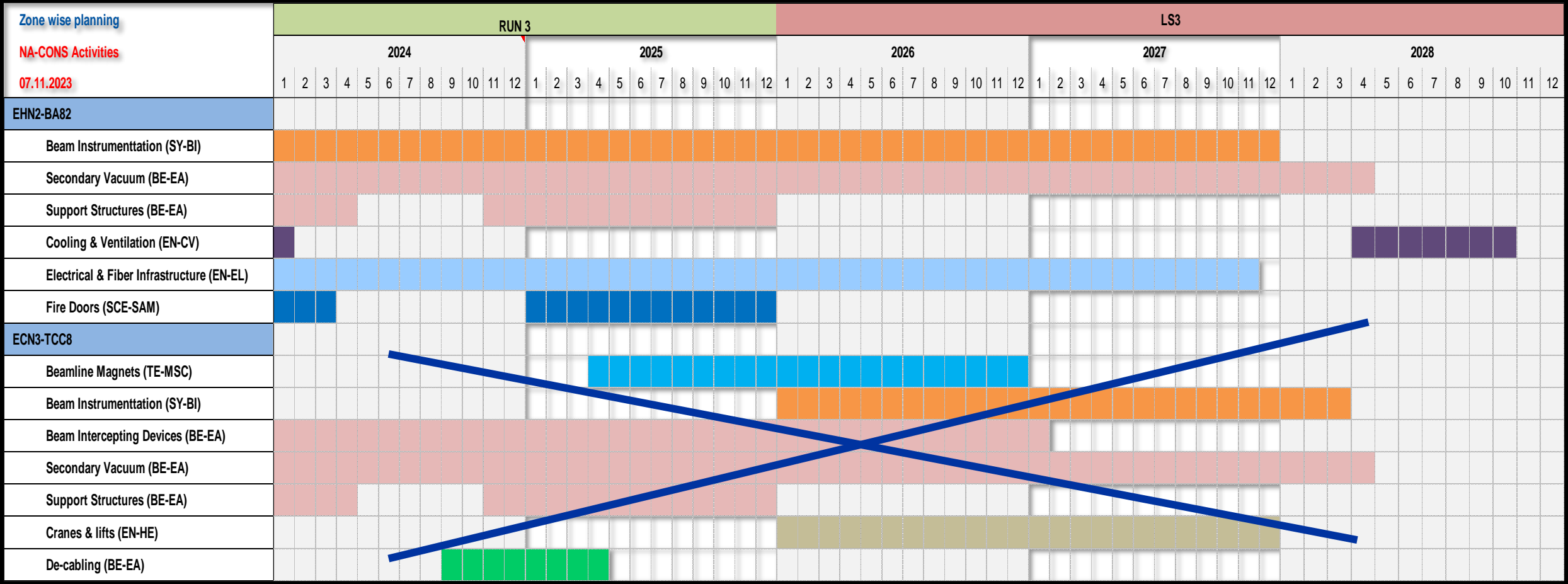
07.11.2023



# LS3 Overview: Zone-wise per systems



# LS3 Overview: Zone-wise per systems



# Summary

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- Missing resources (M+P) addressed at MTP 2023
- New baseline in place following important scope changes resulting from CSSR'23.
- Project progressing according to Baseline
- Almost all recommendations from Review Panel addressed
- Limits of scope + impact from HI Facility in ECN3 identified and taken into consideration
- All technical options validated => scope refined
- Joint Coordination with HI-ECN3 Study Project in place
- Phase-1 Schedule v. busy: anticipate in (E)YETS but constrained by M&O and Physics => Prioritization => Require detailed coordination
- Milestone monitoring in place for all WPs
- Procurement is well under way => 2024 crucial year !



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