



EN-EL Activities for LS2

Including EYETS and YETS

Daniel RICCI

On behalf of EN-EL

Acknowledgements: Stefano MEROLI for PLAN analysis



LS2
Days

7th & 8th November 2016

<http://indico.cern.ch/event/564604/>

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Agenda

1. EN-EL fields of activity for LS2
2. Main projects for EYETS → YETS → LS2
3. PLAN
4. Resources

See presentation at LS2days2015
(<https://indico.cern.ch/event/436424/>)
and backup slides for **more details**



Agenda

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2. Main projects for EYETS → YETS → LS2
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EN-EL fields of activity

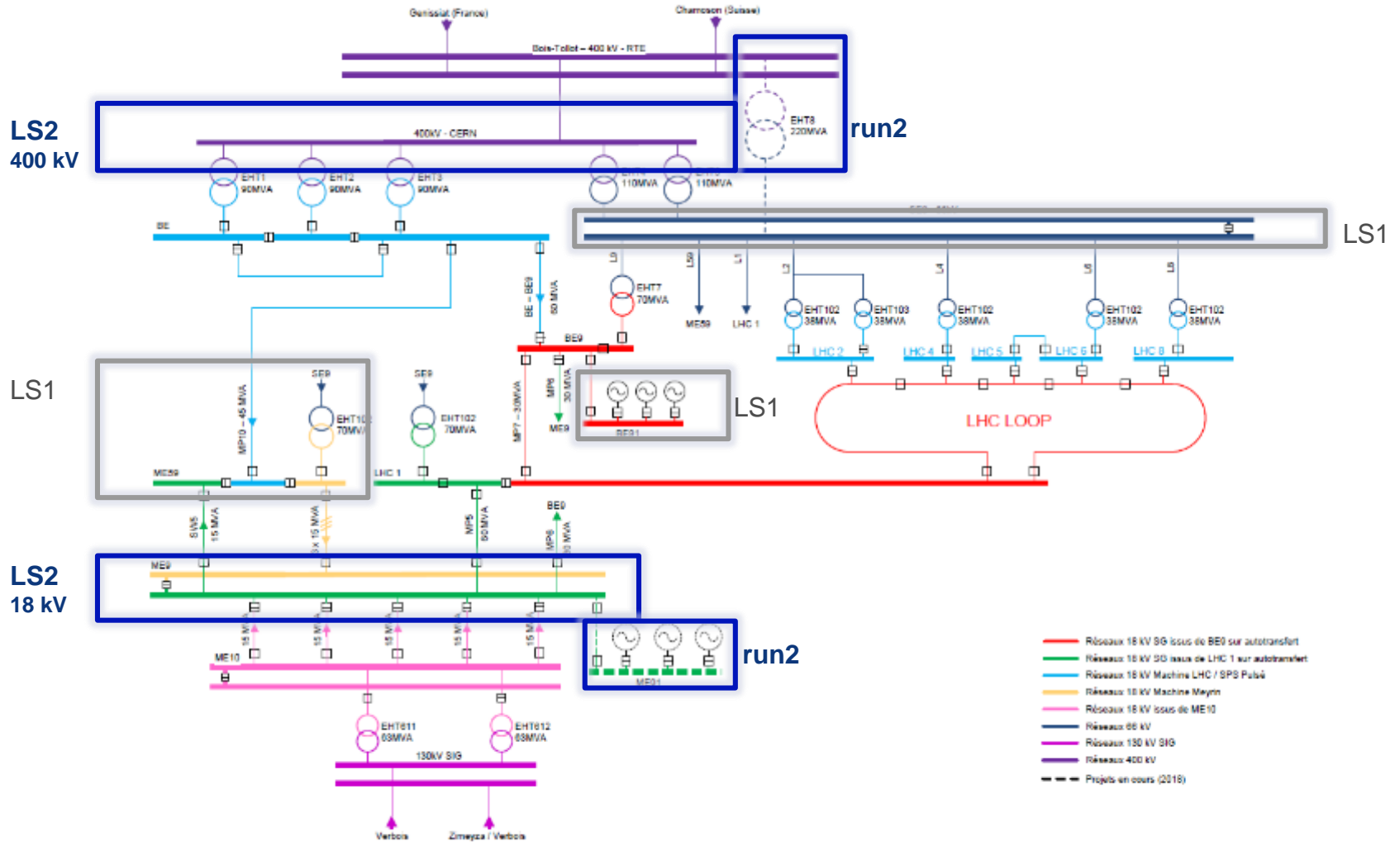
**Electrical
Power
Distribution**

Fibre Optics

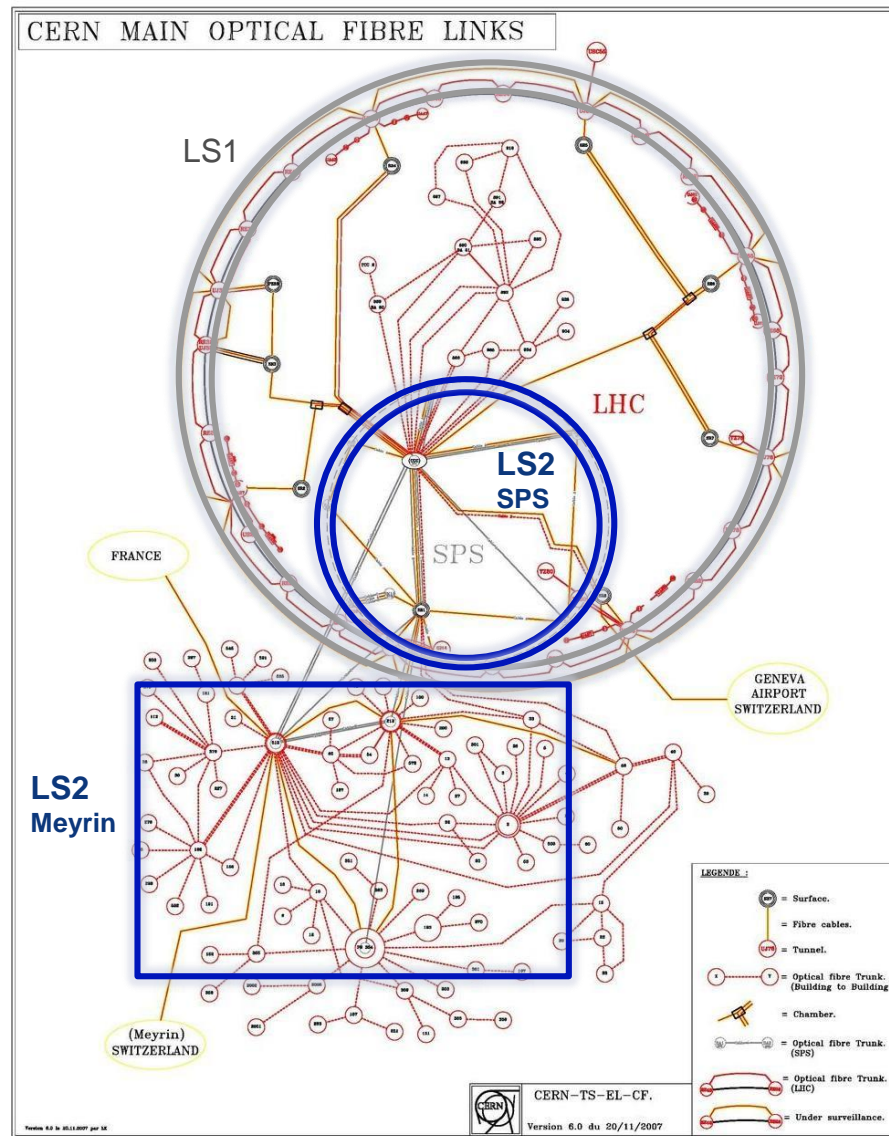
**DC-power
Cabling for
accelerator
magnets**

**Signal
Cabling for
CERN users**

Overview of the electrical network



Overview of the optical fibre network



Agenda

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LIU & Consolidation

400 kV network (major projects)

	YETS 2015-2016	RUN 2016	EYETS 2016-2017	RUN 2017	YETS 2017-2018	RUN 2018	LS2
New 400 kV substation (BE2)	Studies	Contract tendering	Design	Civil works + Installation EL		Commissioning	
Contributor groups	SMB, EN-CV, HSE						
Renovation of the 400 kV protection system	Studies		Design	Procurement		Installation	Commissioning
Contributor groups	SMB, EN-CV, HSE						
Consolidation of the 400 kV park in Prévessin (new incoming circuit breaker, firewalls, transformer non-conformities, etc.)		Studies + Contract tendering (buildings/maintenance)		Design + Procurement	On-site survey	Preparation	Civil works + Renovation + Commissioning
Contributor groups	SMB, EN-HE						

Priority to be re-discussed with LS2C

Plus several maintenance activities on both 400 kV and 66 kV networks

→ see backup and 2015 talk



LIU & Consolidation

18 kV network (major projects)

	YETS 2015-2016	RUN 2016	YETS 2016-2017	RUN 2017	YETS 2017-2018	RUN 2018	LS2
New diesel generators in Meyrin (ME91)	Studies	Civil works	Installation EL equipment	Installation EL + Cabling	Commissioning		
Contributor groups	SMB, EN-CV						
Renovation of the main Meyrin substation (ME9)				Studies		Procurement	Installation/Commissioning
Contributor groups	SMB, EN-CV						

ME91



LIU & Consolidation

Injectors HV & LV networks (major projects)

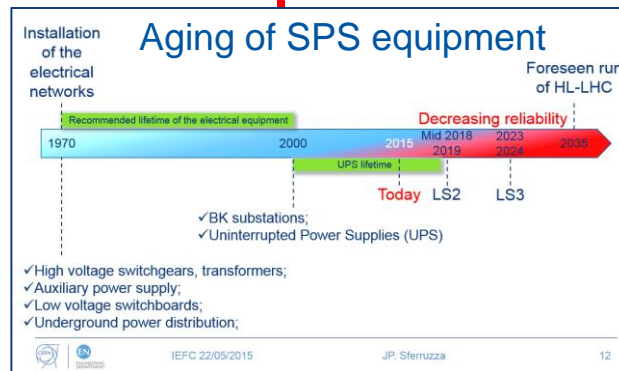
EN-ACE: particular attention to pay to the **co-activities** during machine stops

	YETS 2015-2016	RUN 2016	EYETS 2016-2017	RUN 2017	YETS 2017-2018	RUN 2018	LS2
Consolidation and upgrade (LIU) of the <u>SPS</u> electrical infrastructure	Studies 7 BAs to be done in total (incl. new BAF3 for RF)	Studies + collection user requirem.	Partial renovation SPS P3, P7 + Cons. 3.3. kV safety network P4, P5	BAF3 installation	Partial replacement of LV installations SPS (to be defined)	Civil works new substations	Conn.&Comm. New sub. + Consolidation BA5, BA7
Contributor groups	EN-ACE, EN-HE, HSE-RP						
Consolidation and upgrade (LIU) of the LV distribution in the <u>PS</u> complex				Studies	Survey	Installation infrastruct.	Renovation + new installations
Contributor groups	EN-ACE, EN-HE, HSE-RP						
Consolidation and upgrade (LIU) of the HV/LV distribution in the <u>PSB</u> (incl. cable dismantling program)	Renovation ME25	Studies + Installation Switchb. + New B245	Commissioning new switchboards			Installation HV cables B245-ME25	Commissioning HV link B245-ME25
Contributor groups	EN-ACE, EN-HE, HSE-RP						

Plus several main projects generated by users

- SM18
- HiLumi
- East-Area
- MEQ59

→ see users' presentations



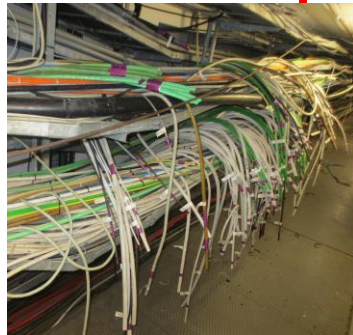
SPS new substations (BA1,2,4,6)

LIU & Consolidation

Injector de-cabling and new-cabling

	YETS 2015-2016	RUN 2016	EYETS 2016-2017	RUN 2017	YETS 2017-2018	RUN 2018	LS2
PS-Booster (12000 cables, 2800 obsolete)	Identification + disconnection		Removal + New cables LIU		New cables LIU		Replacement + New cables LIU
Contributor groups	All Users Groups, plus EN-ACE, EN-HE, HSE-RP						
SPS Point 5 (6500 cables, 3200 obsolete)	Identification + disconnection	Removal BB5	Removal BA5/TS5-		Removal BA5/TS5- + trays/racks LIU		Removal TS5+ + New cables LIU
Contributor groups	All Users Groups, plus EN-ACE, EN-HE, HSE-RP						
SPS Point 3 (8000 cables, 3000 obsolete)	Identification + disconnection			BRF3 new cables LIU			Removal + New cables LIU
Contributor groups	All Users Groups, plus EN-ACE, EN-HE, HSE-RP						
PS ring-centre, TT2 (10000 cables, 300 obsolete <u>so far</u>) Linacs (to be defined)			Identification + Disconnection + New cables LIU		Removal		Removal + New cables LIU
Contributor groups	All Users Groups, plus EN-ACE, EN-HE, HSE-RP						

Pilot: removal of 55 km cables in galleries Hall 180



Retrieval of WCC from TS5-

LIU & Consolidation

Signal & DC Cabling (major projects)

	YETS 2015-2016	RUN 2016	EYETS 2016-2017	RUN 2017	YETS 2017-2018	RUN 2018	LS2
Replacement of irradiated cables (SPS TDC2/TCC2, TS2 or TS4- or TS6+, ~1000 cables/point)	Sample retrieval for tests (TS2)		Sample retrieval for tests (TS2)	Decision to be taken by LS2C on which points to treat*		Preparation (ALARA III)	4-5 months per campaign
Contributor groups				HSE-RP, EN-HE, EN-ACE, Users			
Replacement of DC WCC hoses in LHC (in LHC-1, LHC-2 and LHC-5, ~200 cables)	Monitoring of cracks		Monitoring of cracks		Monitoring of cracks		12-14 months
Contributor groups				EN-ACE, EN-HE, EN-CV, TE-EPC, HSE-RP			

*upon the advice of the Cable Controller (F. Szoncsó)

Plus more than 30 other projects generated by users

- SM18
- Test areas
- SPS-PSS
- Etc...

→ see users' presentations



LIU & Consolidation

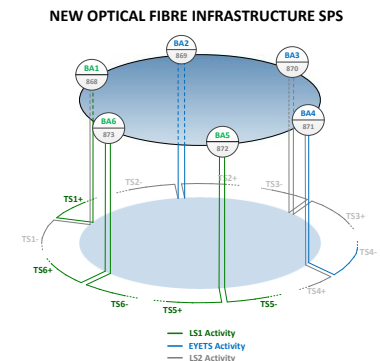
Fibre Optics (major projects)

	YETS 2015-2016	RUN 2016	EYETS 2016-2017	RUN 2017	YETS 2017-2018	RUN 2018	LS2
Consolidation of fibre backbones and main distribution points (Meyrin, Preessin, SPS, LHC)		Studies + installation Mey/Prev	Installation SPS surface	Studies + installation LHC surface	Installation SPS underground	Studies + installation Mey/Prev	2-3 months in LHC
Contributor groups	EN-ACE, EN-HE, HSE-RP						
Deployment of underground SPS fibre infrastructure (part of BI-BPM Upgrade)			Installation SPS P2,P3,P4				6 months in SPS P1,P2,P3,P4
Contributor groups	EN-ACE, EN-HE, HSE-RP, BE-BI						
Survey for Fibrothèque database all machines (~25000 fibre cables)	Survey	Survey + DB test	Survey all machines	Survey surface + DB deployment	Survey all machines	Survey surface	Survey 12 months in all machines
Contributor groups	EN-ACE						

Plus more than 20 other large projects generated by users

- SPS-PSS
- B513 Hub + Greencube
- Experiment DAQs
- Etc...

→ see users' presentations

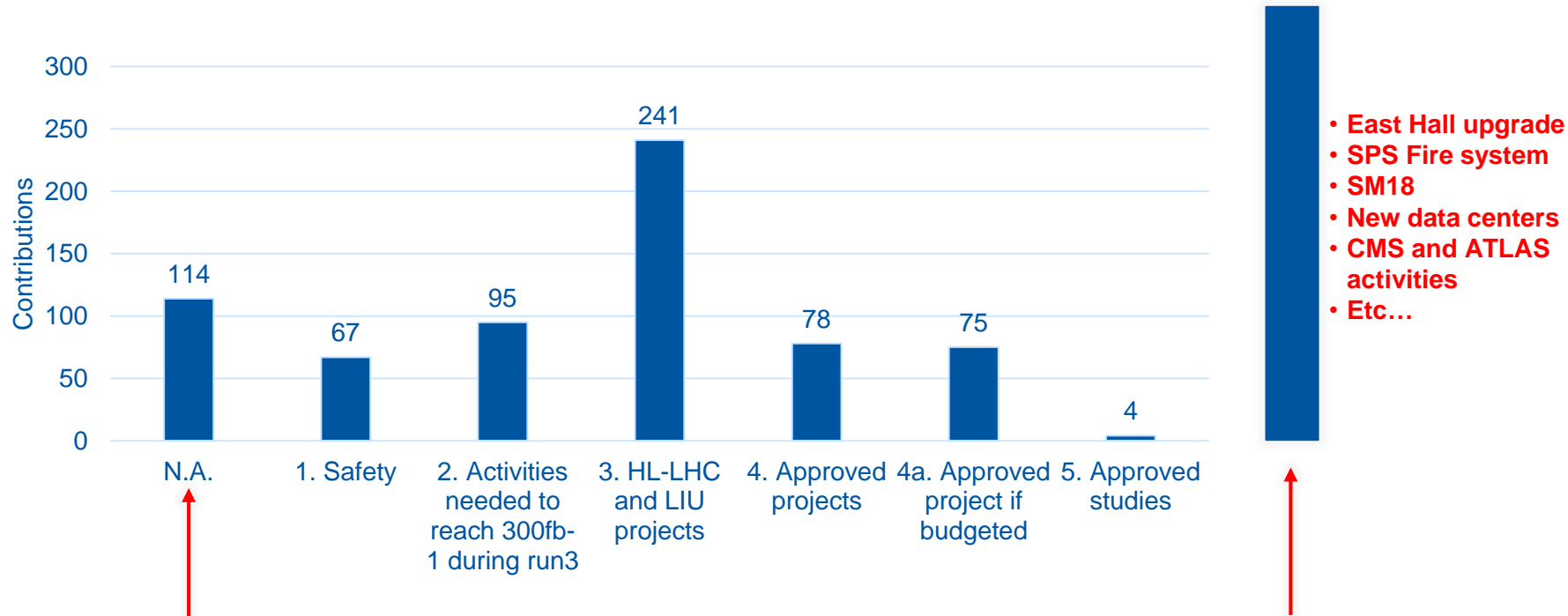


Agenda

1. EN-EL fields of activity for LS2
2. Main projects for EYETS → YETS → LS2
3. **PLAN**
4. Resources

PLAN: EN-EL contributions

- 674 contributions requiring EN-EL (including EN-EL activities).
- 560 approved by the PLAN team, 114 still in creation phase



- East Hall upgrade
- SPS Fire system
- SM18
- New data centers
- CMS and ATLAS activities
- Etc...

114 contribution still in "Creation" phase.
No priority assigned yet (urgent)

Many other very large activities not in PLAN (urgent)

PLAN: current status

- **June 2016:**

297 (**55%**) contributions **validated by EN-EL**

245 (45%) not validated mainly because:

- Missing technical information
- Project strategy not clear (e.g. ALICE fibers, new Leaky Feeder cables)
- Resources currently not available

- **October 2016:**

413 (**75%**) contributions **validated by EN-EL***

129 (25%) not validated further reduced due to:

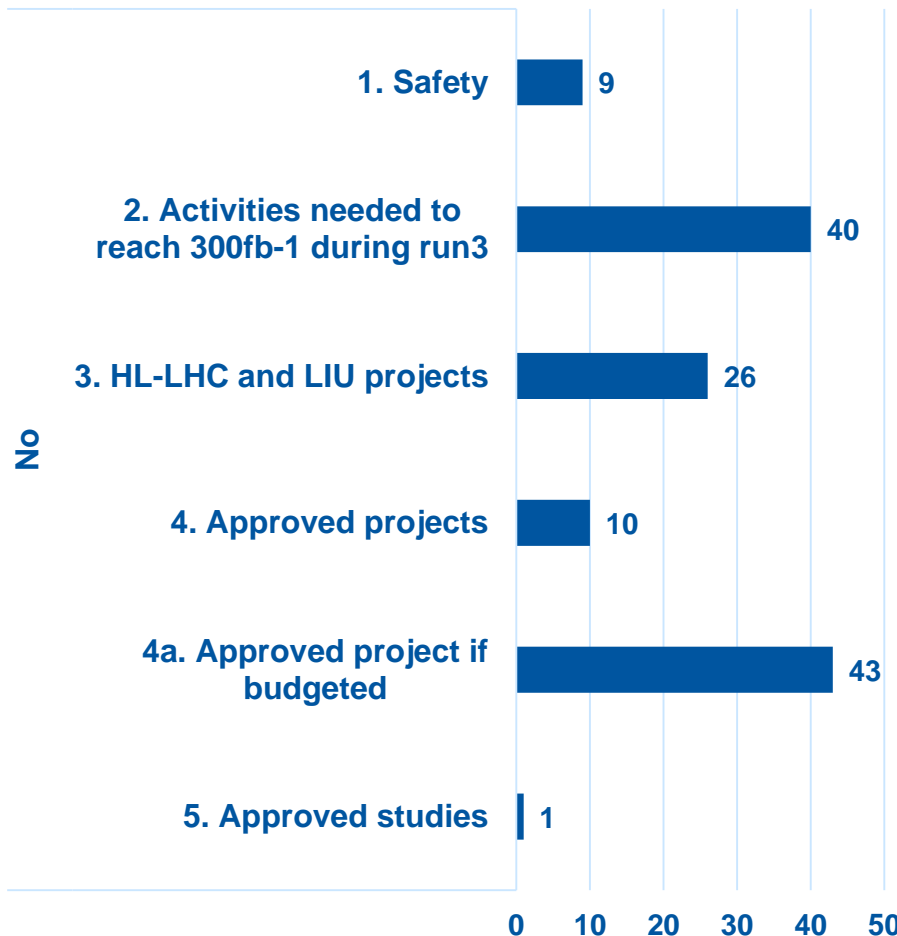
- Clarification of user's needs
- **Assumption: Fibre Optics and Cabling resources for LS2 will be at least those of LS1 (as requested by LS2C)**
 - core of at least 13 staff to expand with:
 - 15+ FELL, PJAS, FSU, etc. (in rotation over 4 years)
 - 10 support from other groups (in rotation over 2 years)

*A huge quantity of activities not prioritized or not in PLAN yet



PLAN: activities not validated

129 of which 91 not validated because of missing technical information from users



1. Safety	Missing technical information about EN-EL contribution (no resource allocated so far)	5
	Project not approved	4
2. Activities needed to reach 300fb-1 during run3	Missing technical information about EN-EL contribution (no resource allocated so far)	31
	EN-EL no longer needed	6
	Project strategy to be clarified	2
	Resources currently not available	1
3. HL-LHC and LIU projects	Missing technical information about EN-EL contribution (no resource allocated so far)	25
	Resources currently not available	1
4. Approved projects	Resources currently not available	7
	Missing technical information about EN-EL contribution (no resource allocated so far)	3
4a. Approved project if budgeted	Missing technical information about EN-EL contribution (no resource allocated so far)	30
	Project strategy to be clarified	9
	Resources currently not available	3
	EN-EL no longer needed	1
5. Approved studies	Activity rescheduled	1

See backup for the details of the activities



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Resources

CONTRACTING

- An additional contractor for electrical installations and cabling is to be foreseen
 - Especially for coping with large cabling works
 - Starting in 2018
 - A strategy is also being developed to tailor the contract functioning to the needs of the Experiments for fibre optics

CERN MANPOWER

- Current **core** staff allows covering **at max** similar-LS1 volumes, **to complement with:**
 - FELL and equivalent → being secured with the help (budget) of LIU, HiLumi, Cons.
 - PJAS → need some help to find good collaborations with institutes in 2017
 - FSU and equivalent industrial support → budget being secured till LS2 by EN
 - **HELP from other Groups** → to prepare as per 2017
 - **A special acknowledgement to BE-CO and BE-BI** for providing people to help during the EYETS 2016-17

Everything must be entered in PLAN and prioritized

- It does not look realistic that we can do everything...(>700 contributions + more to declare)
- EL can provide a no. of FTEs required per activity within the limit of a sustainable growth
- the LS2C to decide if implementing additional measures (more core staff/planning review...)

Conclusions

EN-EL was requested for ~ **700 contributions** in PLAN so far

- 75% of contribution have been validated by EN-EL
 - Still missing technical information for 91 contributions
 - **Users shall provide technical information as soon as possible (see backup slides for further information)**
 - Assumption that resources for the LS2 will be at least those of the LS1
 - To be supported by the LS2 management
- Too many activities not in PLAN or pending approval by LS2C → **Urgent!**
 - Suggests that new activities to be approved and get a priority **every month at least**
 - **Project Leaders to coordinate the correct and timely introduction of activities in PLAN and make sure that EN-EL is declared as a contributor group**
- Priorities need to be re-discussed for a few EN-EL projects
- A few software developments in PLAN to be **rapidly** implemented to ease:
 - the users in the introduction of technical information → **custom fields to be added**
 - and EN-EL in the analysis of the requested contributions → **WBS to create for each project**
 - Contact EN-EL PLAN officer (S. Meroli) for details

An intense EYETS is approaching → preparation well progressing, on schedule so far

Thank you

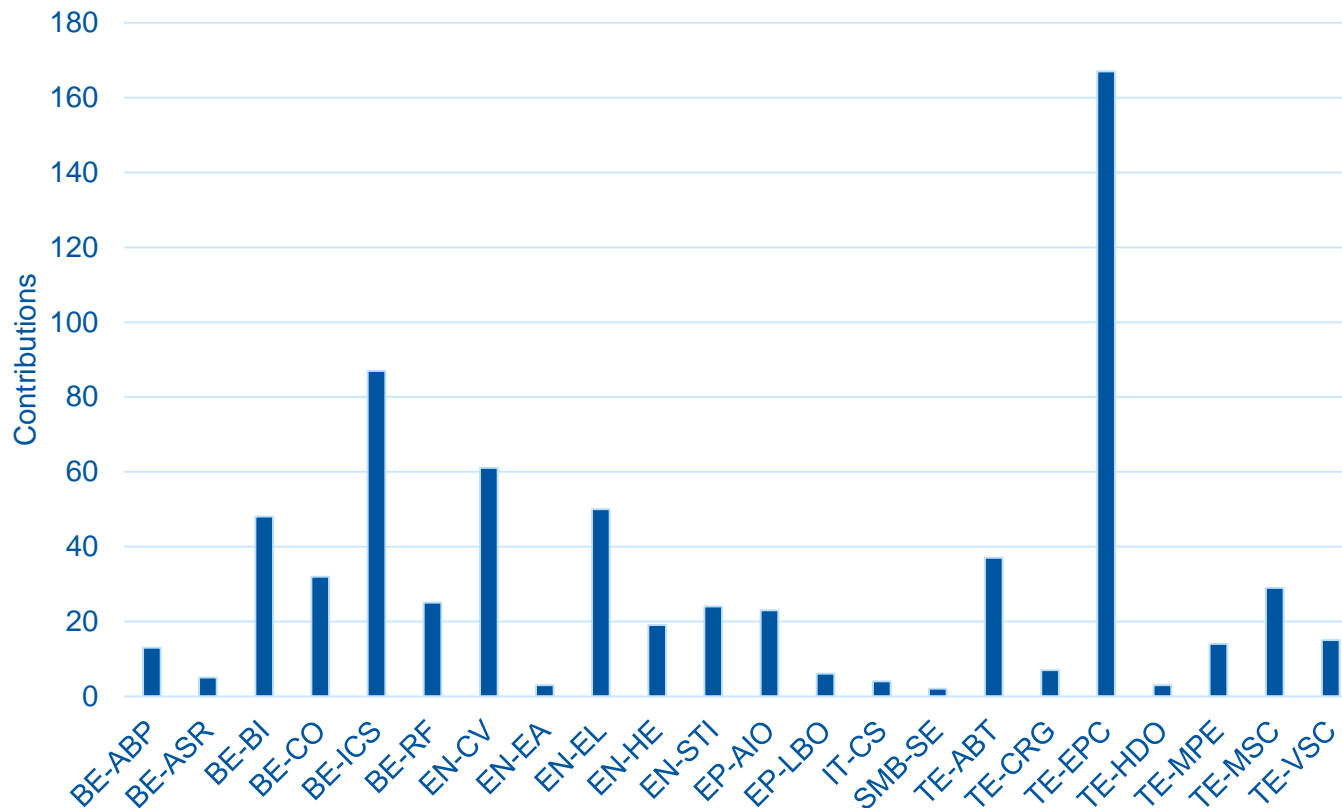


Backup

- Breakdown of EN-EL PLAN contributions
- Breakdown of not approved EN-EL PLAN contributions
- Lists organized per priorities of not approved EN-EL PLAN contributions

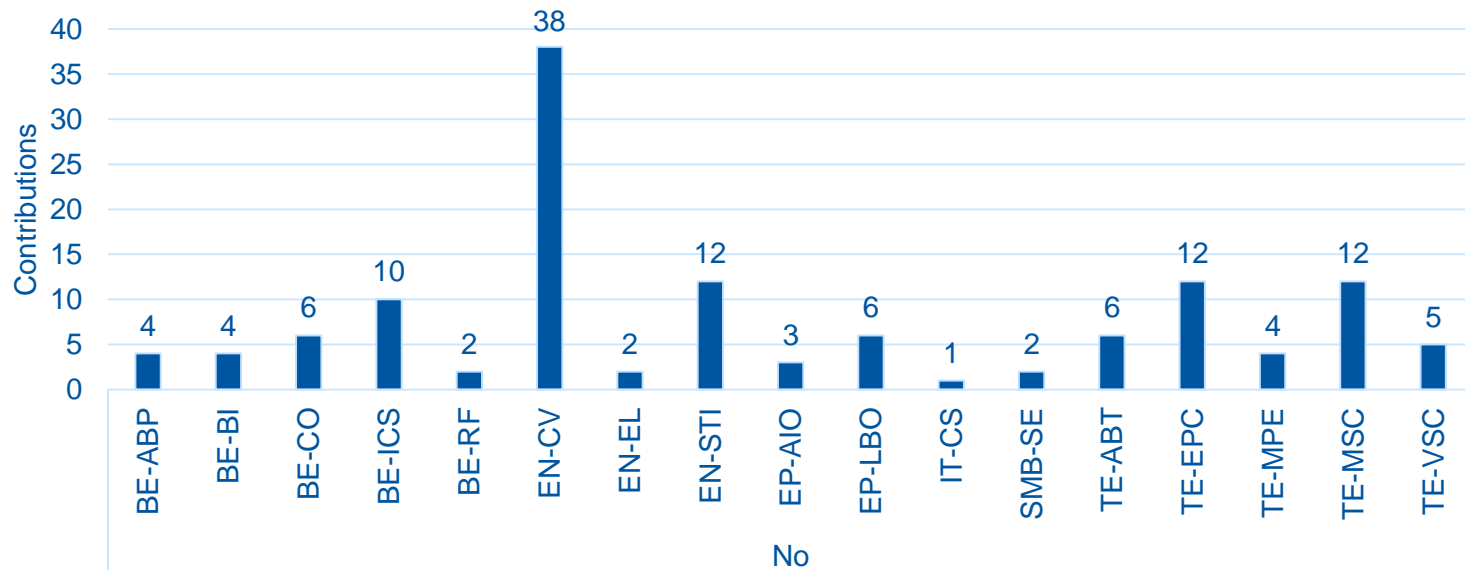
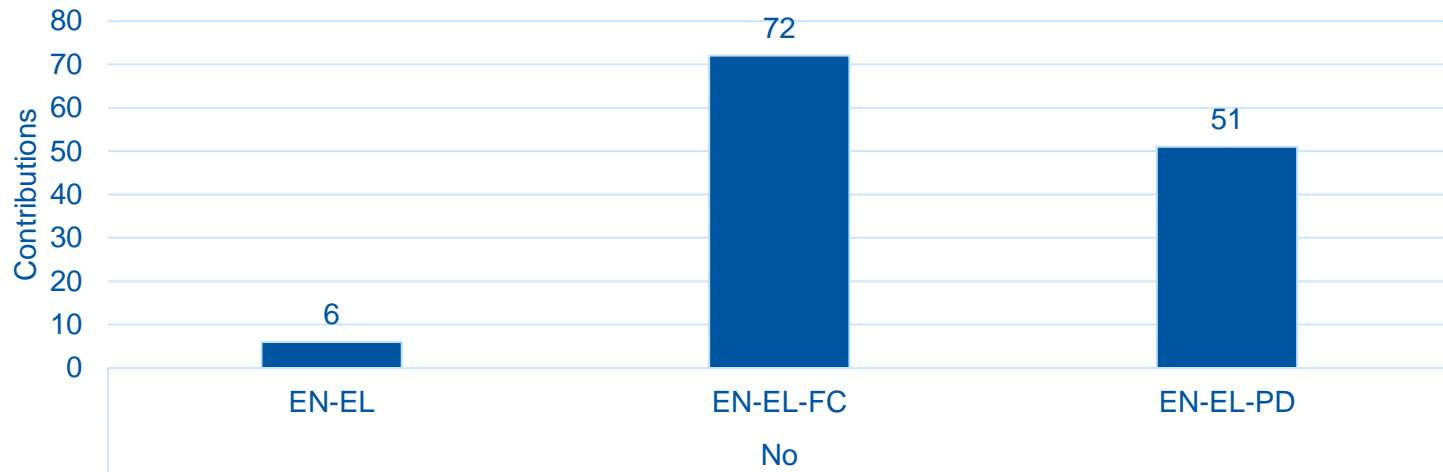
PLAN: EN-EL contributions

- 674 contributions requiring EN-EL (including EN-EL activities)



- About 40% of the contribution coming from TE-EPC and BE-ICS

PLAN: EN-EL contributions not approved



PLAN: contributions not approved – Priority 1

ID	Title	Resp. Group	WBS	New Contributor comments
10364	Supply new BEQ1 SVC for SPS	TE-EPC	SPS-CONS	Missing technical information about EN-EL contribution
10364	Supply new BEQ1 SVC for SPS	TE-EPC	SPS-CONS	Missing technical information about EN-EL contribution
10364	Supply new BEQ1 SVC for SPS	TE-EPC	SPS-CONS	Missing technical information about EN-EL contribution
10960	SPS Underground toilet - Removal and replacement with toilet on the surface	SMB-SE	SPS-CONS	Missing technical information about EN-EL contribution
10960	SPS Underground toilet - Removal and replacement with toilet on the surface	SMB-SE	SPS-CONS	Missing technical information about EN-EL contribution
10776	Install - Automatic Fire Extinguishing - SPS - TA, Shaft & High Radiation Areas	BE-ICS	SPS	Project not approved
10776	Install - Automatic Fire Extinguishing - SPS - TA, Shaft & High Radiation Areas	BE-ICS	SPS	Project not approved
10778	Install - Red Telephones & Hard. Safety Alarm insfr. (MMD, CSAM) - SHIP (?)	BE-ICS	SEC-BEAM-AREAS-SPS	Project not approved
10778	Install - Red Telephones & Hard. Safety Alarm insfr. (MMD, CSAM) - SHIP (?)	BE-ICS	SEC-BEAM-AREAS-SPS	Project not approved

PLAN: contributions not approved – Priority 2

ID	Title	Resp. Group	WBS	New Contributor comment
10910	Removal and re-installation of 44 magnets	TE-MSC	SP-CONS	Disconnected and reconnected magnets done by TA-MSC-MNC
10910	Removal and re-installation of 44 magnets	TE-MSC	SP-CONS	Disconnected and reconnected magnets done by TA-MSC-MNC
10910	Removal and re-installation of 44 magnets	TE-MSC	SP-CONS	Disconnected and reconnected magnets done by TA-MSC-MNC
10819	WIC - Deployment of the Magnet Interlock system in the transfer lines PSB to PS	TE-MPE	INJ-COMP	Execution period to be updated
10010	Renovation of PS complex beam stoppers	EN-STI	INJ-COMP	Missing technical information about EN-EL contribution
10363	Supply new converters for SPS RF Cavities	TE-EPC	SPS-CONS	Missing technical information about EN-EL contribution
10363	Supply new converters for SPS RF Cavities	TE-EPC	SPS-CONS	Missing technical information about EN-EL contribution
10393	Replacement of obsolete SEMs in the PS	BE-BI	SP-CONS	Missing technical information about EN-EL contribution
10414	Consolidate the cooling plant of the PS central building	EN-CV	SP-CONS	Missing technical information about EN-EL contribution
10555	Provide Electronics & Controls for upgraded LBDS MKD switches and generators	TE-ABT	LHC-MAC-MO	Missing technical information about EN-EL contribution
10799	Renovation of GMT External Conditions	BE-CO	ACC-COMP	Missing technical information about EN-EL contribution
10799	Renovation of GMT External Conditions	BE-CO	ACC-COMP	Missing technical information about EN-EL contribution
10809	WIC - Deployment of the Magnet Interlock system in the PS (Auxiliary magnets only)	TE-MPE	SPS-UP	Missing technical information about EN-EL contribution
10821	Consolidation of the Oasis Trigger network	BE-CO	ACC-COMP	Missing technical information about EN-EL contribution
10821	Consolidation of the Oasis Trigger network	BE-CO	ACC-COMP	Missing technical information about EN-EL contribution
10829	Renovation of the Oasis VXI systems	BE-CO	ACC-COMP	Missing technical information about EN-EL contribution
10829	Renovation of the Oasis VXI systems	BE-CO	ACC-COMP	Missing technical information about EN-EL contribution
10363	Supply new converters for SPS RF Cavities	TE-EPC	SPS-CONS	Missing technical information about EN-EL contribution

PLAN: contributions not approved – Priority 2

ID	Title	Resp. Group	WBS	New Contributor comments
10414	Consolidate the cooling plant of the PS central building	EN-CV	SP-CONS	Missing technical information about EN-EL contribution
10424	Consolidate the cooling plant of the PS main magnet	EN-CV	SP-CONS	Missing technical information about EN-EL contribution
10424	Consolidate the cooling plant of the PS main magnet	EN-CV	SP-CONS	Missing technical information about EN-EL contribution
10427	Consolidate the PSB chilled water cooling plant	EN-CV	BOOSTER-CONS	Missing technical information about EN-EL contribution
10427	Consolidate the PSB chilled water cooling plant	EN-CV	BOOSTER-CONS	Missing technical information about EN-EL contribution
10430	Consolidate the PSB cooling plant	EN-CV	BOOSTER-CONS	Missing technical information about EN-EL contribution
10430	Consolidate the PSB cooling plant	EN-CV	BOOSTER-CONS	Missing technical information about EN-EL contribution
10432	Consolidate the PSB ventilation plant	EN-CV	BOOSTER-CONS	Missing technical information about EN-EL contribution
10432	Consolidate the PSB ventilation plant	EN-CV	BOOSTER-CONS	Missing technical information about EN-EL contribution
10466	Replace the existing 35 kW cooling system for cryogenics installation in PM18	EN-CV	SM18	Missing technical information about EN-EL contribution
10489	Consolidate the ventilation system in the SR buildings	EN-CV	LHC-MAC-OP	Missing technical information about EN-EL contribution
10490	Replace chillers in different buildings	EN-CV	LHC-MAC-OP	Missing technical information about EN-EL contribution
10524	Build and instal the new detector cooling station for RICH 1 & 2 - LHCb	EN-CV	LHCb	Missing technical information about EN-EL contribution
10526	Build and install the new detector cooling station for SCiFi - LHCb	EN-CV	LHCb	Missing technical information about EN-EL contribution
10528	Install the new cooling station for FE electronics - LHCb	EN-CV	LHCb	Missing technical information about EN-EL contribution
10294	LHC- MKB Vacuum Pumping Scheme Consolidation BTD62.DR	TE-VSC	LHC-MAC-OP	No copper cables or optical fibres needed according the last information from the user
10296	LHC- MKB Vacuum Pumping Scheme Consolidation BTD68.DB	TE-VSC	LHC-MAC-OP	No copper cables or optical fibres needed according the last information from the user
10911	Installation of 55 new magnets including the removal of obsolete magnets	TE-MSC	SP-CONS	Replaced by 11009-10-11-12
10389	Linac3 source micro-wave generator	BE-ABP	LINAC3-CONS	Resources currently not available
10366	Replacement of irradiated cables in TS2+ or TS4+ or TS6-	EN-EL	SPS-CONS	Project strategy to be clarified by the cable controlled and by the LS2 management
10042	TN routers hardware upgrade	IT-CS	COMPUTING	Resources available for optical fibre installation. Further information will be needed for the electrical distribution infrastructure
10322	Replacement of irradiated cables in TDC2-TCC2	EN-EL	SPS-CONS	Project strategy to be clarified by the cable controlled and by the LS2 management

PLAN: contributions not approved – Priority 3

ID	Title	Resp. Group	WBS	New Contributor comments
10274	Provide high voltage pulsed generators, Electronics & Controls for PSB BI.KSW	TE-ABT	PBU-PRJ	Missing technical information about EN-EL contribution
10001	TCDI SPS to LHC transfer line collimator renewal for LIU	EN-STI	LIU-PROJ	Missing technical information about EN-EL contribution
10004	LBE Dump shielding for LIU	EN-STI	LINAC4-INS	Missing technical information about EN-EL contribution
10015	TDIS for HL-LHC	EN-STI	HLLHC5	Missing technical information about EN-EL contribution
10341	Supply new converters for SPS TCDI	TE-EPC	SPU-PRJ	Missing technical information about EN-EL contribution
10341	Supply new converters for SPS TCDI	TE-EPC	SPU-PRJ	Missing technical information about EN-EL contribution
10677	Installation of 2 cryo-assemblies with 11T Magnets	TE-MSC	LHC-MAC	Missing technical information about EN-EL contribution
10906	Wire collimators TCTW for EYETS	EN-STI	HLLHC5	Missing technical information about EN-EL contribution
10906	Wire collimators TCTW for EYETS	EN-STI	HLLHC5	Missing technical information about EN-EL contribution
10927	Installation new LT.BHZ20 (L4 connection)	TE-MSC	LINAC4-INS	Missing technical information about EN-EL contribution
10932	Installation of new 10 magnets for Linac 4 connection to PS BOOSTER	TE-MSC	LINAC4-INS	Missing technical information about EN-EL contribution
10932	Installation of new 10 magnets for Linac 4 connection to PS BOOSTER	TE-MSC	LINAC4-INS	Missing technical information about EN-EL contribution
10932	Installation of new 10 magnets for Linac 4 connection to PS BOOSTER	TE-MSC	LINAC4-INS	Missing technical information about EN-EL contribution
10936	Installation of the new BHZ , main INJ and EXT magnets	TE-MSC	PBU-PRJ	Missing technical information about EN-EL contribution

PLAN: contributions not approved – Priority 3

ID	Title	Resp. Group	WBS	New Contributor comments
10942	Installation of new magnets for 2.0 GeV operations (14 units), Including the dismantling of the BTM.BHZ10 magnet into manageable pieces.	TE-MSC	PBU-PRJ	Missing technical information about EN-EL contribution
10311	Supply new converters for Booster Main Magnets (Dipole & Quadrupole) & Trims [POPS-B]	TE-EPC	PBU-PRJ	Missing technical information about EN-EL contribution
10316	Supply new converters for Booster Ejection Transfer Bending Magnets	TE-EPC	PBU-PRJ	Missing technical information about EN-EL contribution
10341	Supply new converters for SPS TCDI	TE-EPC	SPU-PRJ	Missing technical information about EN-EL contribution
10351	Supply new converters for PS Injection PI.BSM40, 41, 43 & 44 new Bumper Magnets	TE-EPC	PSU-PRJ	Missing technical information about EN-EL contribution
10448	Install new cooling towers for the upgrade of the cooling systems of point 18 - SF18	EN-CV	SM18	Missing technical information about EN-EL contribution
10448	Install new cooling towers for the upgrade of the cooling systems of point 18 - SF18	EN-CV	SM18	Missing technical information about EN-EL contribution
10521	Cooling and ventilation plants for new bldgs in Point 5	EN-CV	CMS	Missing technical information about EN-EL contribution
10521	Cooling and ventilation plants for new bldgs in Point 5	EN-CV	CMS	Missing technical information about EN-EL contribution
10964	Cooling plant for BAF3 and RF equipment	EN-CV	SPS-UP	Missing technical information about EN-EL contribution
10964	Cooling plant for BAF3 and RF equipment	EN-CV	SPS-UP	Missing technical information about EN-EL contribution
10048	Modify PS PPS (Personnel Protection System) for LN4 connection	BE-ICS	LINAC4	Resources currently not available

PLAN: contributions not approved – Priority 4

ID	Title	Resp. Group	New Contributor comments
10035	Deploy pilot installation of new SPS PPS (Personnel Protection System)	BE-ICS	Resources currently not available
10036	New SPS PPS (Personnel Protection System)	BE-ICS	Resources currently not available
10036	New SPS PPS (Personnel Protection System)	BE-ICS	Resources currently not available
10047	Modify LHC PPS (Personnel Protection System)	BE-ICS	Resources currently not available
10047	Modify LHC PPS (Personnel Protection System)	BE-ICS	Resources currently not available
10450	Install new cooling and ventilation systems in the new 311 building	EN-CV	Missing technical information about EN-EL contribution
10787	End-of-life replacement of turbo pumps in arcs and LSS (LHC-IV)	TE-VSC	Resources currently not available
10811	WIC - Deployment of the Magnet Interlock system for TT2/nTOF	TE-MPE	Resources currently not available
10889	SPS- Consolidation racks electrical distribution	TE-VSC	Missing technical information about EN-EL contribution
10889	SPS- Consolidation racks electrical distribution	TE-VSC	Missing technical information about EN-EL contribution

PLAN: contributions not approved – Priority 4a

ID	Title	Resp. Group	WBS	New Contributor comments
10006	AD target area renewal	EN-STI	AD-CONS	Missing technical information about EN-EL contribution
10006	AD target area renewal	EN-STI	AD-CONS	Missing technical information about EN-EL contribution
10007	CHARM target upgrade	EN-STI	SEC-BEAM-AREAS-PS	Missing technical information about EN-EL contribution
10011	EA collimator controls consolidation	EN-STI	SEC-BEAM-AREAS-PS-CONS	Missing technical information about EN-EL contribution
10016	Update and refurbish RadMon	EN-STI	ACC-COMP	Missing technical information about EN-EL contribution
10023	renew AD beam stoppers	EN-STI	AD-MO	Missing technical information about EN-EL contribution
10196	Preparation work for the installation of Hollow Electron Lenses	BE-ABP	LHC-MAC-UP	Missing technical information about EN-EL contribution
10196	Preparation work for the installation of Hollow Electron Lenses	BE-ABP	LHC-MAC-UP	Missing technical information about EN-EL contribution
10196	Preparation work for the installation of Hollow Electron Lenses	BE-ABP	LHC-MAC-UP	Missing technical information about EN-EL contribution
10280	ALICE fibers	EP-AIO	ALICE	Project strategy to be clarified
10280	ALICE fibers	EP-AIO	ALICE	Project strategy to be clarified
10280	ALICE fibers	EP-AIO	ALICE	Project strategy to be clarified
10369	Consolidate PS Septa Electronics & Controls	TE-ABT	SP-CONS	Resources currently not available
10390	Consolidate Isolde target modulator & power supplies	TE-ABT	ISOLDE-CONS	Resources currently not available
10391	Provide Electronics & Controls for restart of AD Horn Test Bench in B195	TE-ABT	AD-CONS	Resources available for control and power cables installation. Further information will be needed for the electrical distribution infrastructure
10392	Consolidate the Linac 3 HVAC system	EN-CV	LINAC3	Missing technical information about EN-EL contribution
10453	Install demineralised water skid in SM18	EN-CV	SM18	Missing technical information about EN-EL contribution
10481	Consolidate the NA underground ventilation	EN-CV	SPS	Missing technical information about EN-EL contribution
10482	Consolidate the ventilation system for the AD target	EN-CV	AD-CONS	Missing technical information about EN-EL contribution
10482	Consolidate the ventilation system for the AD target	EN-CV	AD-CONS	Missing technical information about EN-EL contribution
10485	Consolidate the cooling system of the AD hall	EN-CV	AD-CONS	Missing technical information about EN-EL contribution
10485	Consolidate the cooling system of the AD hall	EN-CV	AD-CONS	Missing technical information about EN-EL contribution

PLAN: contributions not approved – Priority 4a

ID	Title	Resp. Group	WBS	New Contributor comments
10491	Consolidate the compressed air production system of Meyrin	EN-CV	INFRA-CONS	Missing technical information about EN-EL contribution
10491	Consolidate the compressed air production system of Meyrin	EN-CV	INFRA-CONS	Missing technical information about EN-EL contribution
10516	Upgrade of the cooling power at the chilled water station by 1.5 MW	EN-CV	CMS	Missing technical information about EN-EL contribution
10516	Upgrade of the cooling power at the chilled water station by 1.5 MW	EN-CV	CMS	Missing technical information about EN-EL contribution
10549	Consolidate the compressed air production system in Preessin	EN-CV	INFRA-CONS	Missing technical information about EN-EL contribution
10549	Consolidate the compressed air production system in Preessin	EN-CV	INFRA-CONS	Missing technical information about EN-EL contribution
10550	Upgrade AD-Horn Electronics & Controls for ignitron eradication	TE-ABT	AD-CONS	Resources currently not available
10551	Consolidate the control system of the North Area cooling towers	EN-CV	SURF-AREAS-ACC	Missing technical information about EN-EL contribution
10633	EN-EL Long distance Optical fibers installation for LHCb	EP-LBO	LHCB-UP	Project strategy to be clarified
10633	EN-EL Long distance Optical fibers installation for LHCb	EP-LBO	LHCB-UP	Project strategy to be clarified
10633	EN-EL Long distance Optical fibers installation for LHCb	EP-LBO	LHCB-UP	Project strategy to be clarified
10644	Consolidate the Linac 2 ventilation control and regulation system	EN-CV	LINAC2	Missing technical information about EN-EL contribution
10646	BSRTR for Beam 2.	BE-BI	LHC-MAC-MO	No copper cables or optical fibres needed according the last information from the user
10649	LHC orbit system DOROS	BE-BI	LHC-MAC-MO	Missing technical information about EN-EL contribution
10650	New BCTs for AD	BE-BI	AD-MO	Missing technical information about EN-EL contribution
10750	LHCb PC farm - data center	EP-LBO	LHCB-UP	Project strategy to be clarified
10750	LHCb PC farm - data center	EP-LBO	LHCB-UP	Project strategy to be clarified
10750	LHCb PC farm - data center	EP-LBO	LHCB-UP	Project strategy to be clarified
10957	Continued refurbishment of main BHN/BHW magnets	TE-MSC	AD-CONS	Missing technical information about EN-EL contribution
10968	Renovation of electrical power distribution to racks in building 353	BE-RF	SP-CONS	Missing technical information about EN-EL contribution
10968	Renovation of electrical power distribution to racks in building 353	BE-RF	SP-CONS	Missing technical information about EN-EL contribution

PLAN: contributions not approved – Priority 5

ID	Title	Resp. Group	WBS	New Contributor comments
10812	WIC - Deployment of the Magnet Interlock system for the East area	TE-MPE	SEC-BEAM-AREAS-PS-UP	Activity rescheduled to LS3

Other Electrical Distribution projects

- **MAINTENANCE**

- 400 kV and 66kV preventive maintenance

- **OPERATION**

- Tests for: AUG, Auto-Transfer, Normal/Secour

- **FROM USERS**

- TE/EPC

- New SVC in Meyrin (ME59)

- Replacement of the SPS SVC in Prévessin (BE)

- Other users' projects

- Experiments

- SM18-SF18

- East Area

- EHN1

- Etc...

**See Users'
presentations
for details**

Maintenance

To be organized in campaigns

- 400 kV and 66 kV preventive maintenance
 - 1st step: 400 kV preventive maintenance (incl. transformers)
 - 2nd step: 66 kV preventive maintenance (incl. transformers)
 - With the new 400 kV substation (BE2), it will be possible to separate the 400 kV and 66 kV preventive maintenance for the first time
 - The power available at CERN will not be limited during the 400 kV and 66 kV preventive maintenance (instead of a previous limitation to 60 MVA through the Swiss network)

Duration of the above maintenance activities:

- ✓ 400 kV preventive maintenance: in parallel with other consolidation activities
- ✓ 66 kV preventive maintenance: approx. 1 month

Maintenance

To be organized in campaigns

- Other preventive and curative maintenance
 - 400/18 kV transformers
 - 18/3.3 kV, 18/0.4 kV and 3.3/0.4 kV transformers
 - 18 kV and 3.3 kV switchgear
 - 400 V switchboards
 - 48 V DC, UPS and lighting systems
 - AUG (consolidation)

Duration of the above maintenance activities:

- ✓ Meyrin / West Area / PS Complex – Several weeks
- ✓ North Area – 1 week per point (BA80/ BA81/ BA82)
- ✓ SPS – 1 week per point (SPS1/2/3/4/5/6/7)
- ✓ LHC – 1 week per point (LHC1/18/2/3/4/5/6/7/8)

Operation

- AUG tests:

- Meyrin / West Area – 4 days per year (Admin. Area, PS Complex, ISR, West Area)
- Prévessin / North Area – 4 days per year (Prévessin, BA80, BA81, BA82)
- SPS – 7 days per year
- LHC – 9 days per year

- Auto transfer test:

- 1 day for network preparation
- 1 week-end test
- 1 day for nominal configuration

- “Normal/Secours” test:

- Approx. 2 hours required in total (the test itself requires approx. 10 min early one morning)