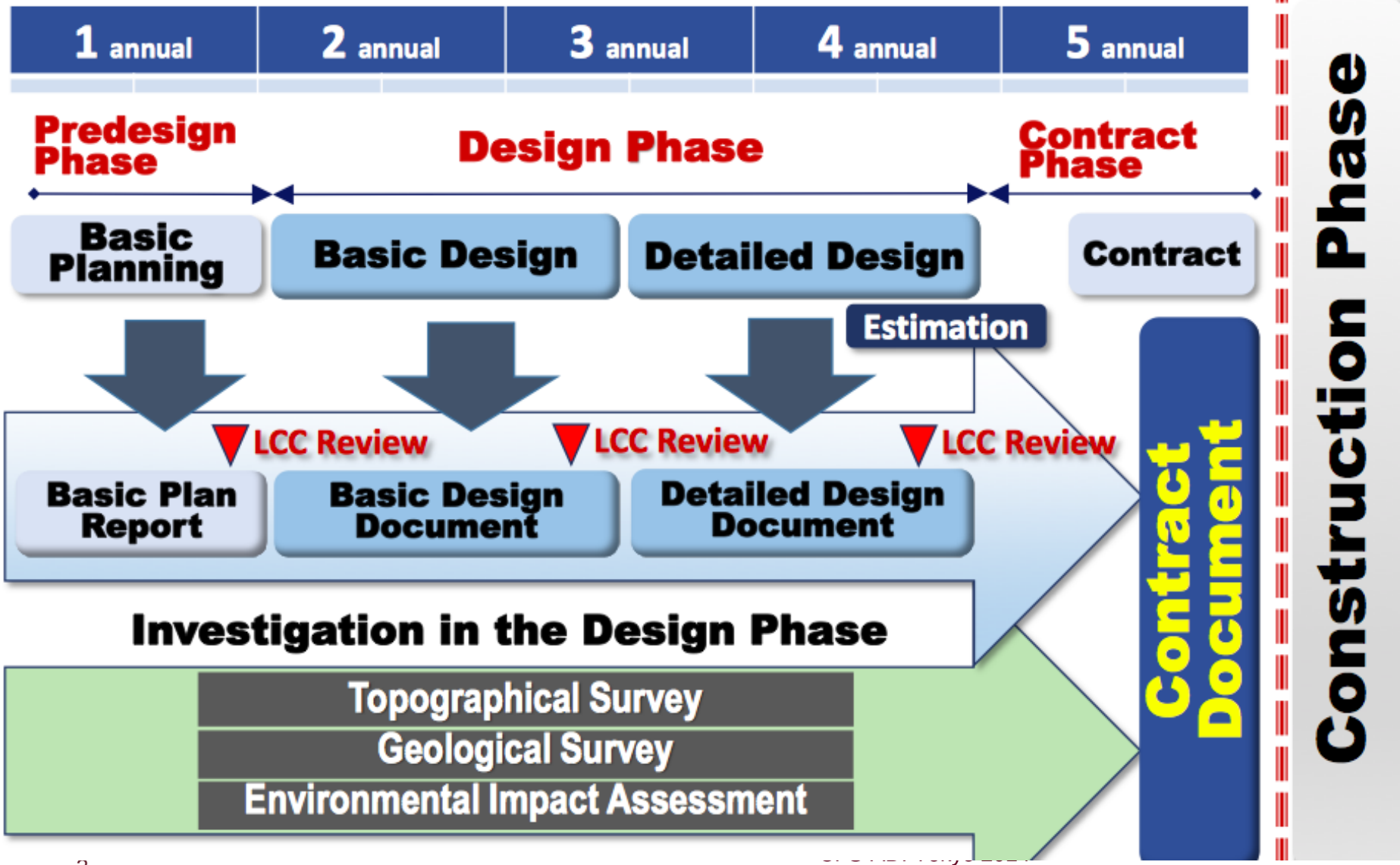
Meeting Summary

Thanks to all the presenters who made this an excellent meeting

Pre Construction Schedule

Long term & Medium term



Ideal design process (simplified)

LCC-Phase resource summary

Row Labels	BDS min	BDS max	Damping Rings min	Damping Rings max	Electron Source min	Electron Source max	Main Linacs min	Main Linacs max	Positron Source min	Positron Source max	RTML min	RTML max	Total min	Total max
Accelerator physics	0	0	3	9					3	9			6	18
Beam dynamics	9	18	4	6			3	6	6	12	3	6	25	48
Cryomodule							1	3					1	3
Integration	1	3			2	2	1	3	4	8			8	16
Lattice designer	2	6	1	2	1	3	3	6	4	9	1	3	12	29
Magnet/PS	1	3	1	3	1	3	1	3	3	7	1	3	8	22
Management									0	0			0	0
SRF			1	1			1	3					2	4
Vacuum	1	3	1	3	1	1	1	3	2	4	1	3	7	17
Warm RF					1	3			4	8			5	11
Grand Total	**14**	**33**	**11**	**24**	**6**	**12**	**11**	**27**	**26**	**57**	**6**	**15**	**74**	**168**

estimated ~10 person years (±4)

AD&I mission: Confirm/provide/update CFS requirements for site-dependent design
Make sure it is all sufficiently documented

Tunnel & below ground

500GeV, 18 MW beam on Cu 20 X_0 target

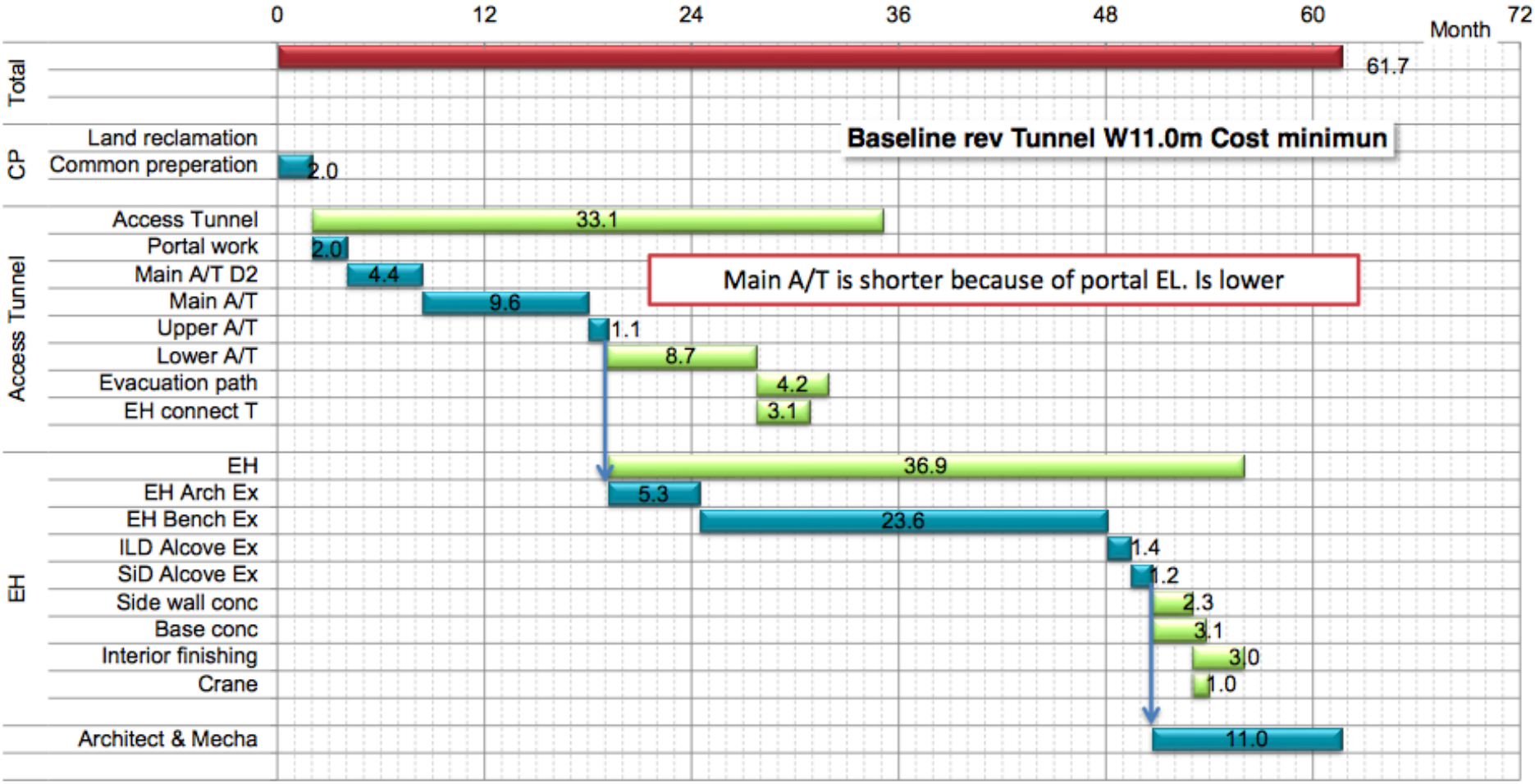
Interaction Region design

Detector Requirements both SiD and ILD minimum needs – Karsten Buesser

Rôle of the ILC Laboratory

- What are realistic models for the construction of the detectors?
  - all elements are shipped just-in-time and ready for installation directly to the IP?
  - some pre-assembly work needed at ILC lab?
    - sub-assemblies, testing, repairs
- What services are expected at the ILC lab?
  - office space?
  - detector R&D infrastructure (clean rooms, test beds)?
  - manpower support?
    - only service personnel?
    - scientists?
    - resident in lab, employed by collaborations or by lab?
  - Experience from existing labs:
    - usually large support groups (assembly help, CFS, crane drivers, surveyors, safety, radiation, etc.)
    - usually have own research groups
- PDAD (H. Yamamoto) has just initiated this discussion with the

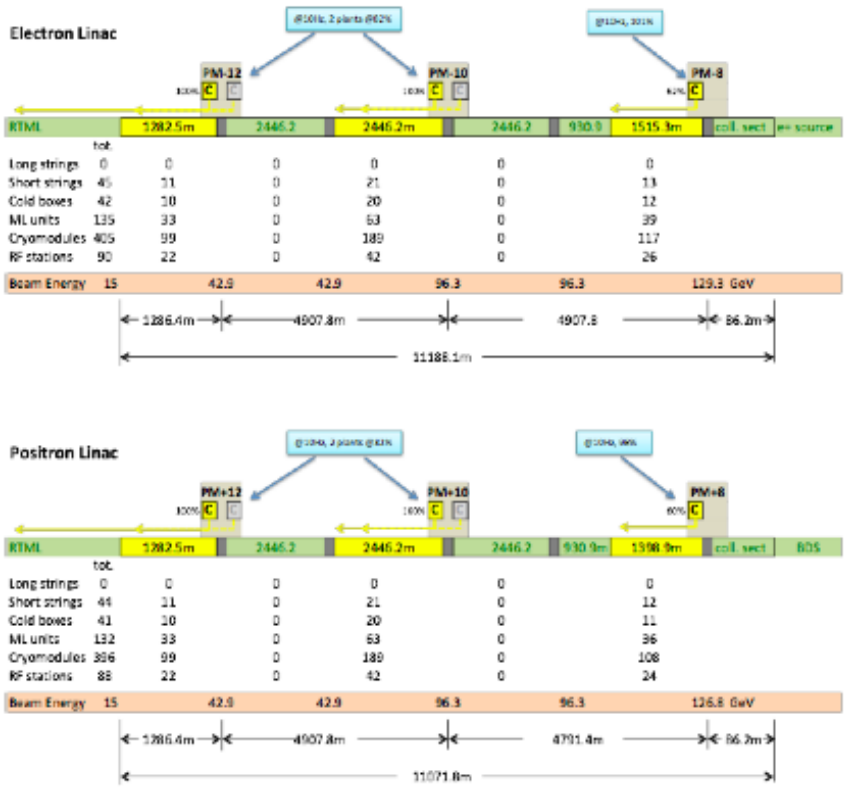
Baseline (Detectors / HT installation) Schedule



Energy Staging

LINEAR COLLIDER COLLABORATION

Scenario C: Hybrid



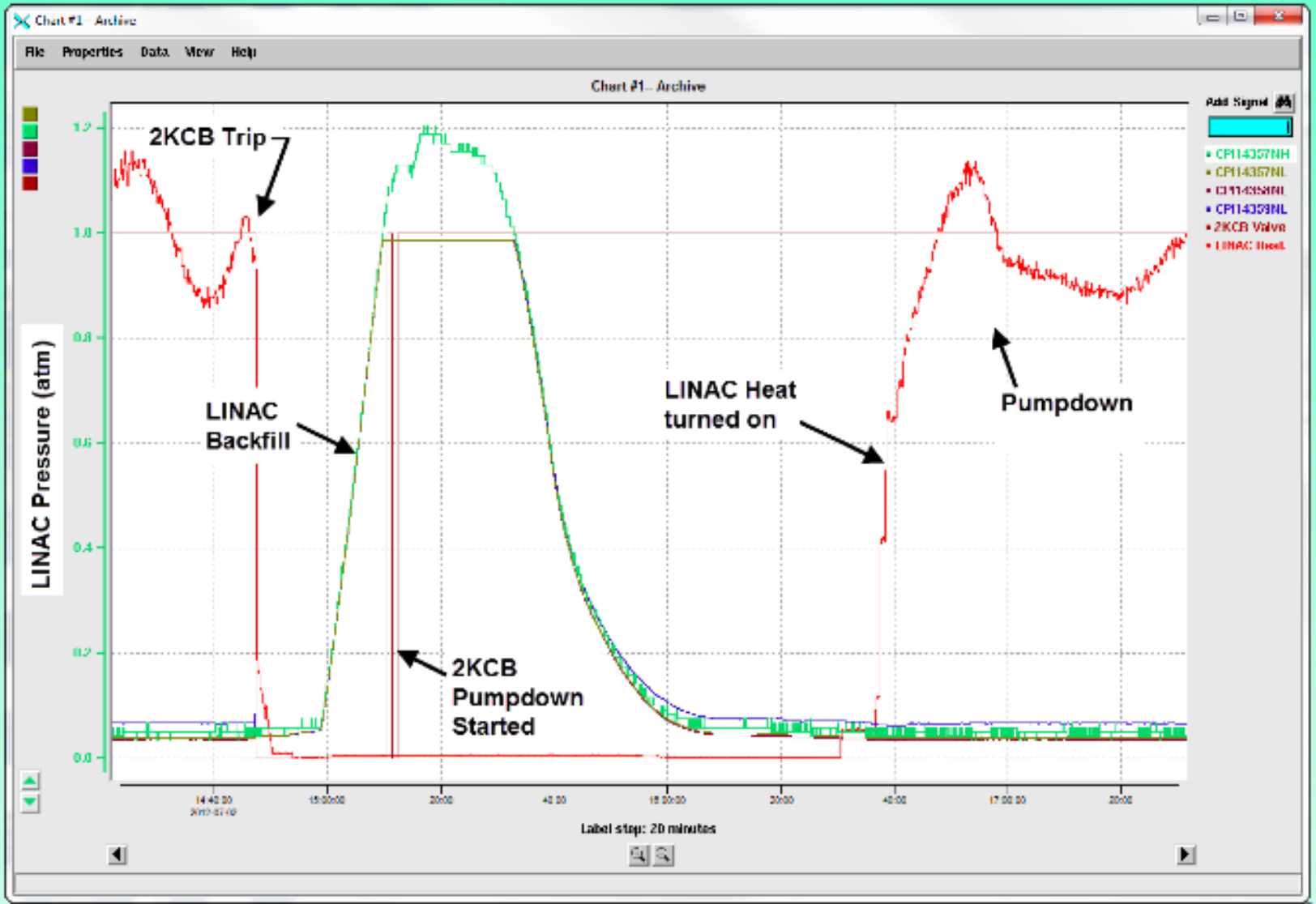
Scenario C:
Fill from Shafts

PM±12: 1 full cryoplants
PM±10: 1 full cryoplant
PM±8: 1 ML cryoplant at 62/60%

Installation of all cryoplants allows running at 10Hz rep rate

Site Issues

Pump Down Time and Stability

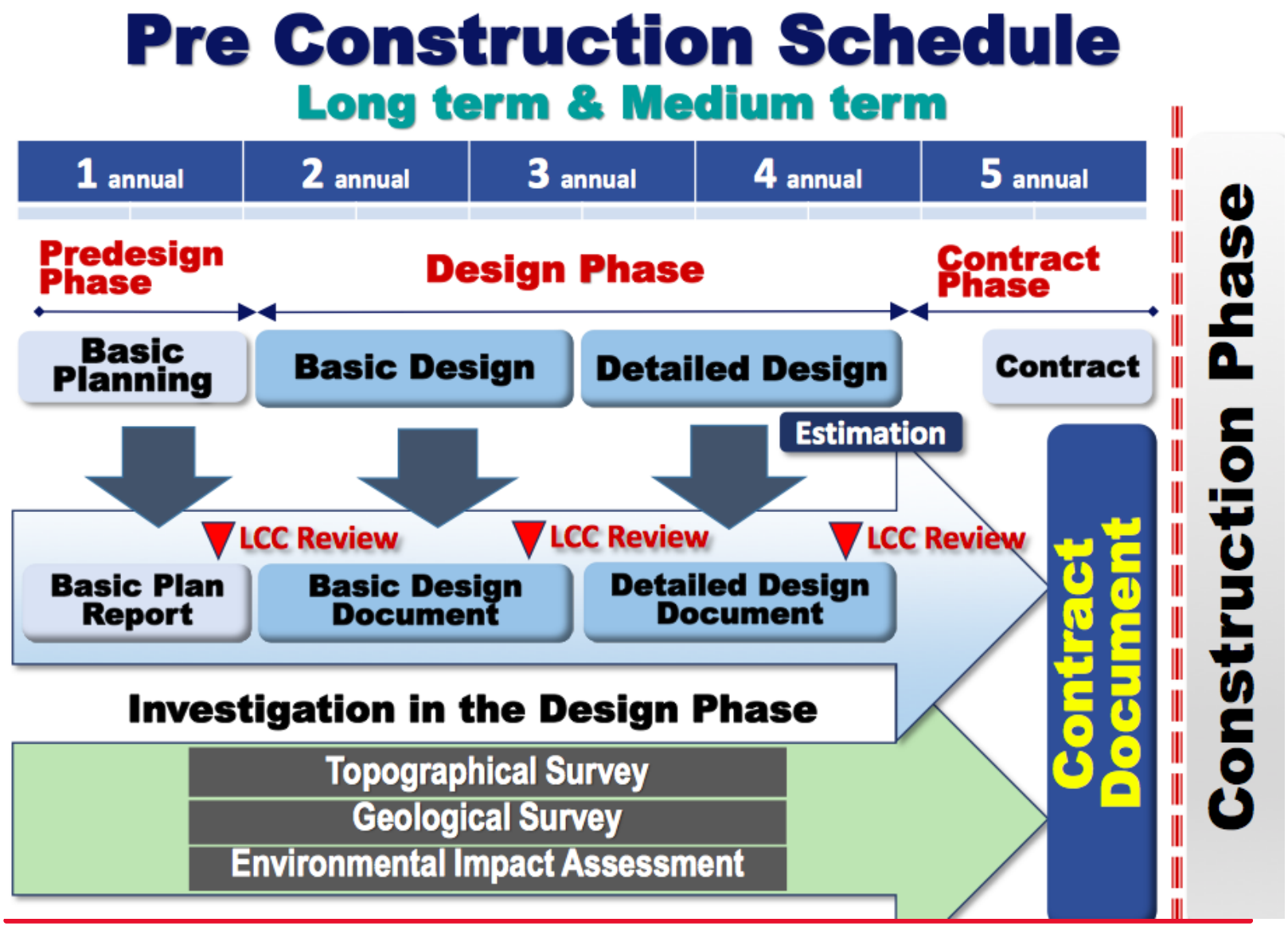


Goals & Questions

- Can we back-end load the pre-project CFS activities to reduce funding needs pre-2016 without impacting the schedule ?
- Can we determine the ADI requirements for the next 2-to-3 years which at a minimum provides the necessary information for the CFS work? 12 months ?
- Can we agree on the optimal energy phasing implementation scheme
- Can we agree on the preferred IP concept
- Are the tunnel X-section & penetrations OK
- How do the lab/campus facilities interact with the project – equipment testing, engineering support, equipment staging and storage, offices, power & water infrastructure, etc…
- Any significant site-specific impact to the TDR design

- Cost vulnerability – can we identify any potential significant cost risk hidden in the post-TDR environment ?

Goals & Questions



Goals & Questions

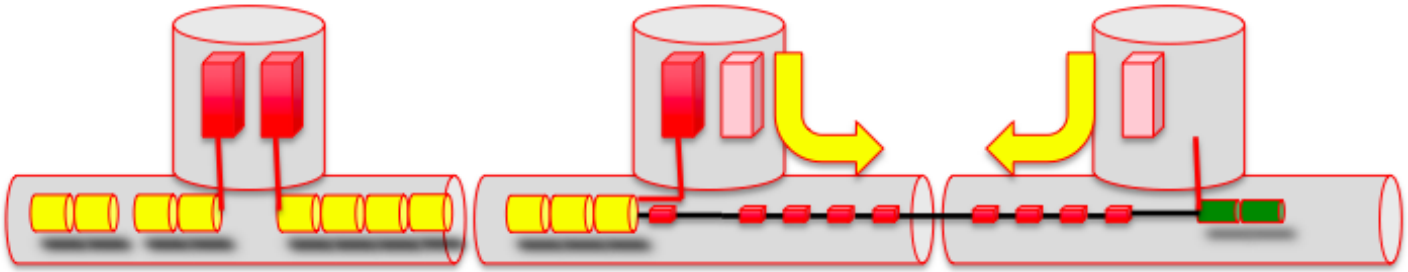
Pre Construction Design Work

Civil Engineering Design

WORK SCOPE TABLE by every phase			
	Basic Planning	**Basic Design**	**Detailed Design**
Facility Arrangement	**R**	**OR**	**NR**
	Determination of - IR point, Access system - BL Route & Elevation	Revision of - IR point, Access system - Site & Access portal	- Minor modifications of the basic design
Shape & Dimension	**R**	**OR**	**NR**
	Determination of - Cross Section Shape - Basic Dimension	Revision of - Cross section Shape - Whole Dimension	- Minor modifications of the basic design
Structure & Materials	**-**	**OR**	**NR**
		Structural planning - Load condition, Materials - Seismic Design plan	- Structural Design - Construction planning - Detailed Design
Schedule & Cost	**R**	**NR**	**NR**
	- Assumption Schedule - Outline Cost Estimation	Trial Estimation - Direct Cost, Unit cost	Cost Estimation - Final Cost for Bidding

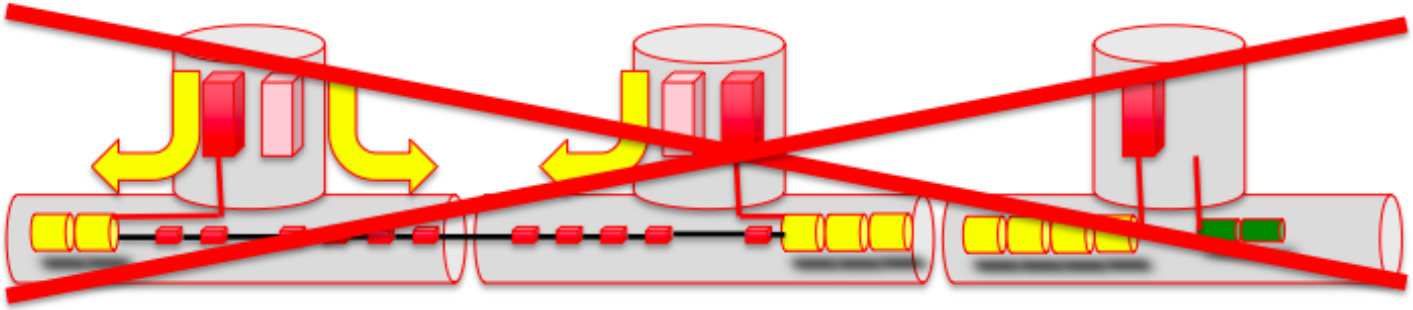
Legend: **R**=Required **OR**=Optional Required **NR**=Not Required

Upgrade Installation



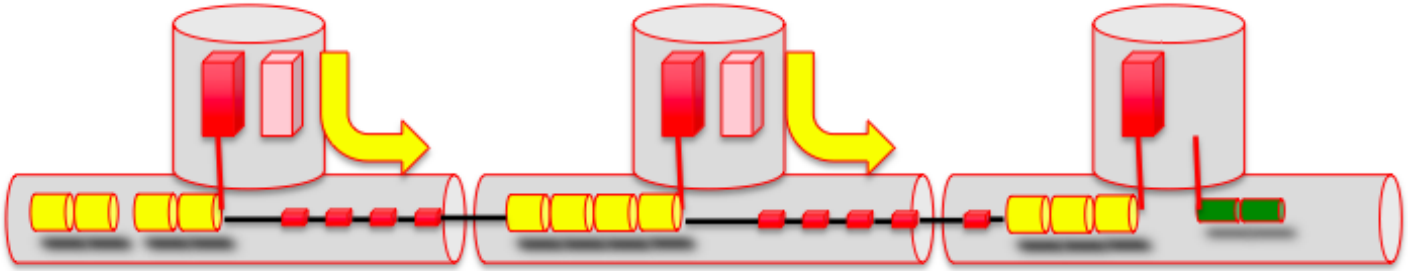
Scenario A:
Fill from upstream

- Optimal for beam dynamics
- Helium transfer line needed
- No spare cryo capacity at PM12



Scenario B:
Fill from downstream

- Worst for beam dynamics
- Helium transfer line needed
- No spare cryo capacity at PM8

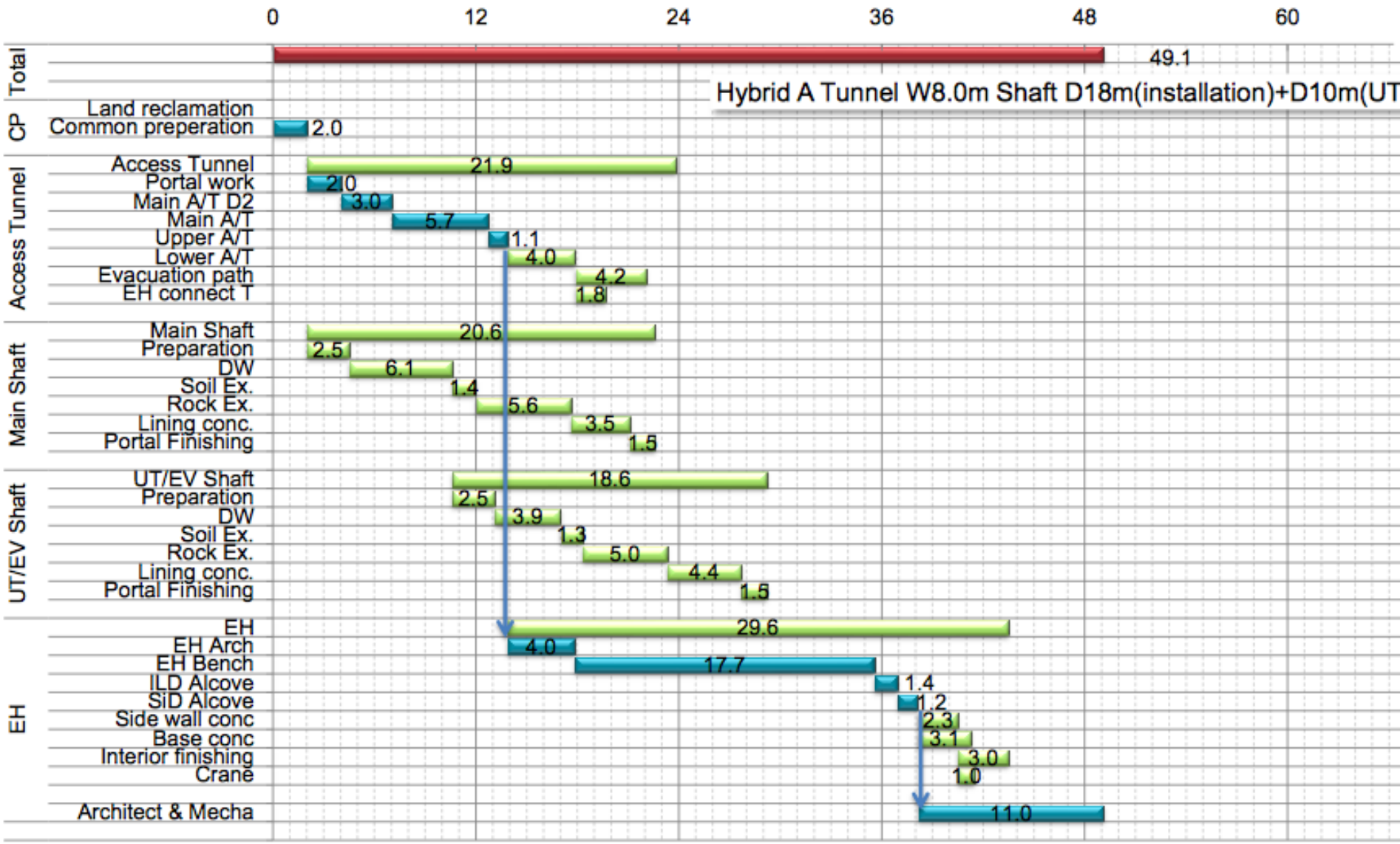


Scenario C:
Fill from Shafts

- OK for beam dynamics
- No helium transfer line
- Spare cryo capacities

Goals & Questions

Hybrid-A (Detectors / VS installation) Schedule



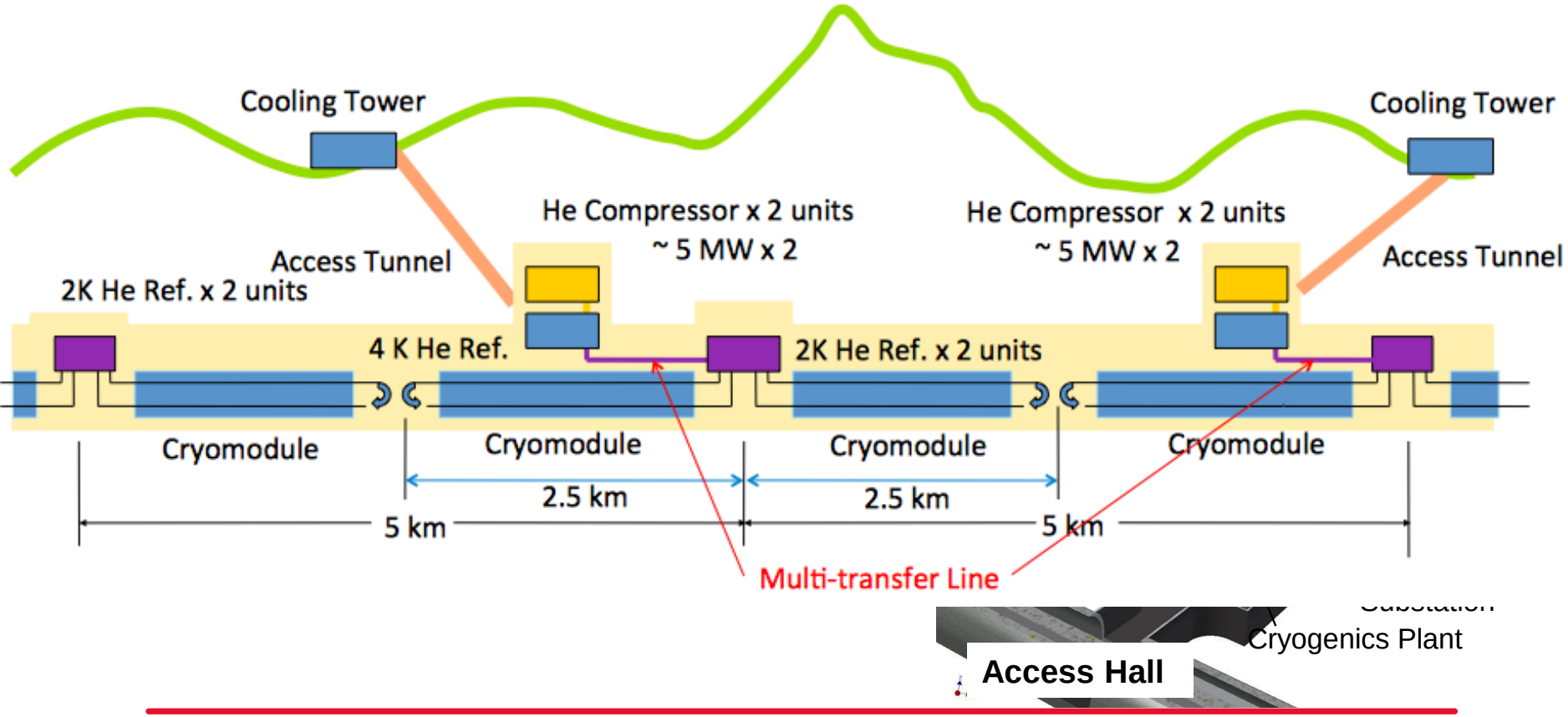
Goals & Questions

Are the tunnel X-section & penetrations OK ?

Transportation of Cryo-PDS Module
-Corridor Dimension-

LINEAR COLLIDER COLLABORATION

Conceptual Design of Cryogenic System 2



Goals & Questions

- How do the lab/campus facilities interact with the project – equipment testing, engineering support, equipment staging and storage, offices, power & water infrastructure, etc…
- Other than some generic arm waving estimates we have little meaningful information here.
- We need to decide on the perceived role of the ILC laboratory and start with some form of functional analysis.
- Principally, but not completely, a domestic issues

Goals & Questions

- Any significant site-specific impact to the TDR design
- Nothing perceived to date. We need to set the IP location
- Cost vulnerability – can we identify any potential significant cost risk hidden in the post-TDR environment ?
- No.
- The Interaction Region is still more fluid than we would like, but the potentially largest issue appears to me to be the ILC laboratory