

comparison (selected items only)

02/27/19

this is for very rough comparison only, not to be used as requirement document



	RDR NUMBERS (Table 4.1 Page 149)	CDR NUMBERS (Table 4.1 Page 246; Table 4.2 page 248)	CF 2016 (used for CF CDR dwg & estimates)	Sep2018 (gathered by CF)	Master RDS - 1/03/2019	Master RDS - 2/01/2019	Master RDS - 2/26/2019	units	utilities affected
POWER (steady state)	9,420	13,220	20,335	22,955	24,505	24,861	24,769	kw	power
Power Amp only (HB, LB, SSRs, HWR)			7,713	9,563	11,690	11,263	11,263	kw	power
other LINAC & MAGNET & BTL	4,970	8,770	667	1,437	2,119	2,903	2,903	kw	power
future (2) HB650	0	0	1,680	1,680	included	included	included	kw	power
future RF separator *			1,680	1,680 *	2,101 *	2,100 *	2,008	kw	power
CRYO	3,250	3,250	4,000	4,000 *	4,000 *	4,000 *	4,000 *	kw	power
CONVENTIONAL	1,200	1,200	4,595	4,595 *	4,595 *	4,595 *	4,595 *	kw	power
RFPA efficiency (for refrence)			50%	40%	40%	41.8%	41.8%		
LCW TOTAL		6,174	6,952	8,651	11,083	11,188	9,431	kw	lcw & tw @ PUB'
86F LCW						444	444	kw	lcw & tw @ PUB'
86F LCW Power Amp (HB, LB SSRs, HWR)		5,974	6,738	8,400	11,027	10,593	8,836	kw	lcw & tw @ PUB'
LCW for future (2) HB650	0	0	not included	not included	included	included	included	kw	lcw & tw @ PUB'
LCW for future RF separator			not included	not included	not included	not included	not included	kw	should LCW include this?
MAGNETS BTL		200	214	251	56	151	151	kw	lcw & tw @ PUB'
BLDG MINIMUM %RH									
GALLERY	none	none	none	none	30% RH	none	none		power or nat gas
HIGH BAY	none	none	none	none	30% RH	none	none		power or nat gas
TUNNEL	none	none	none	none	none	none	none		na
BTL	none	none	none	none	none	none	none		na
HEAT LOAD TO AIR (HLA) & CHW- TOTAL			1,667	1,827	2,153	2,054	2,053	kw	chilled water
GALLERY HLA		975	1,225	981	1,694	581	581	kw	chilled water
GALLERY HLA (from Power Amp LB, HB, SSRs)						1,163	1,163	kw	chilled water
HIGH BAY HLA			61	61	53	51	51	kw	chilled water
LINAC TUNNEL LASER ROOM						?	?	kw	chilled water (space 75+ - 3)
83F & RFQ LCW (CHW)		376	102	491	103	103	103	kw	chilled water
68F LCW (CHW)			16	16	24	24	24	kw	chilled water
LINAC TUNNEL VACUUM PUMPS						2.0	2	kw	chilled water
PUB RACK ROOM						3.0	2.5	kw	chilled water
CRYO COLDBOX HLA				15	16	15	15	kw	chilled water
CRYO NETWORK RM HLA						6.5	6.5	kw	chilled water
CRYO COLDBOX CHW			263 **	263 **	263 **	105 ***	105 ***	kw	separate cryo chiller?
OTHER HLA									
TUNNEL LINAC HLA		0	5	92	104	106	109	kw	chilled water or DX (space 78 + - 5)
BTL HLA				43	46	36	36	kw	no cooling
PUB						167	167	kw	ventilation
CRYO WARM HLA				200	200		200	kw	ventilation
LCW supply Temperature			86F	86F	88F max	88F max	88,90,92F max		chilled water if under 85F
LCW delta T			10F dt	10F dt	TBD (7Fdt?)	7.2F DT	7.2F DT		pipe size tw & lcw (CF use 10F dt)
LINAC TUNNEL space Temperature			70-78		78F	73-83F	73-83F		chilled water or DX
LINAC GALLERY space Temperature			68-78		72F-78F	67F-78F	67F-78F		chilled water
BTL TUNNEL space Temperature			not cooled		na	na	na		no cooling

* placeholder

** 150 gpm allowance (assume 12F dt)

*** 60 gpm allowance (assume 12F dt)