(as of 09/10/2016)

Effort & Budget Summary

LEVEL OF EFFORT (FTE-yrs)

Site Management	<u>FY15</u> 0.50	<u>FY16</u> 0.50	<u>FY17</u> 0.70	<u>FY18</u> 0.60	<u>FY19</u> 0.60	<u>Total</u>
Steady-state Operations Support	6.14	5.38	4.44	3.83	3.24	
Deployment Planning	0.00	0.30	0.30	0.30	0.30	
Deployment Support	0.00	0.50	0.50	0.50	0.50	
Project Management	0.35	0.35	0.35	0.35	0.35	
Total	6.99	7.03	6.29	5.58	4.99	30.88
BUDGET (\$K)	1,954,035	1,895,627	1,842,889	1,725,804	1,625,778	
	(closed)	(allocated)				
	<u>FY15</u>	(anocated) FY16	<u>FY17</u>	<u>FY18</u>	<u>FY19</u>	Total
Steady-state Operations	<u></u>	<u>1110</u>	<u>/</u>	<u>1110</u>	<u>111</u>	1000
Personnel	1,543,737	1,451,490	1,546,717	1,450,697	1,346,617	7,339,258
Travel	11,000	11,000	11,000	11,000	11,000	55,000
M&S (hardware, repairs, etc.)	281,000	297,786	146,000	120,000	120,000	964,786
Sub-total (SS Ops)	1,835,737	1,760,276	1,703,717	1,581,697	1,477,617	8,359,044
New Hardware Deployment						
Personnel	-	198,800	204,444	277,829	215,398	896,471
Travel	-	-	-	-	-	-
Equipment (compute)	495,000	992,175	779,171	825,323	986,897	4,078,565
Equipment (storage)	60,000	50,359	86,575	71,767	85,817	354,518
Sub-total (New Deployment)	-	1,241,334	1,070,189	1,174,919	1,288,112	5,329,554
Project Management						
Personnel	110,298	127,351	131,172	135,107	139,160	643,089
Travel	6,000	6,000	6,000	7,000	7,000	32,000
M&S	2,000	2,000	2,000	2,000	2,000	10,000
Sub-total (Project Mgmt)	118,298	135,351	139,172	144,107	148,160	685,089
Total Project Cost						
Personnel	1,654,035	1,777,641	1,882,333	1,863,633	1,701,176	8,878,818
Travel	17,000	17,000	17,000	18,000	18,000	87,000
M&S	283,000	299,786	148,000	122,000	122,000	974,786
Equipment (compute)	495,000	992,175	779,171	825,323	986,897	4,078,565
Equipment (storage)	60,000	50,359	86,575	71,767	85,817	354,518
Management Reserve	45,964	83,039	86,920	99,276	86,113	401,312
Total	2,555,000	3,220,000	2,999,999	2,999,999	3,000,003	14,774,999
CD 2/2 Destant Critic D ("1	2 000 000	2 000 000	2 000 000	2 000 000	2 000 000	14,000,000
CD-2/3 Budget Guidance Profile	2,000,000	3,000,000	3,000,000	3,000,000	3,000,000	14,000,000
Additional funding for larger budget Total CD-2/3 Planning Budget Profile	555,000 2,555,000	220,000 3,220,000	- 3,000,000	3,000,000	3,000,000	775,000 14,775,000
Difference between budget and guidance			, ,			
Difference between budget and guidance Compute hardware portion of difference	(0)	(0)	(1)	(1)	3	(1)
Compute naraware portion of aifference	(0)	(0)	(1)	(1)	2	

Notes:

1) Management reserve set at 20% of unspent deployment personnel budget and 3% of unspent steady-state ops personnel budget.

2) CD-1 planning guidance profile has been provided for a \$14M budget.

3) CD-2/3 budget profile has been set for a \$14M budget.

4) FY15 Cost Accounting: Carry-over from past project assigned to FY15 and remainder to FY16

(as of 09/10/2016)

Level of Effort Summary, by Site

LEVEL OF EFFORT (FTE-yrs)

LEVEL OF EFFORT (FIE-yis)	FY15	<u>FY16</u>	FY17	FY18	FY19	Total
Brookhaven			<u></u>	1110	<u> / </u>	2000
Site Management	0.10	0.10	0.30	0.20	0.20	
Steady-state Operations Support (BG/Q)	0.40	0.40	0.40	-	-	
Steady-state Operations Support (Cluster)	-	-	0.99	1.10	1.10	
Deployment Planning	-	-	0.30	-	-	
Deployment Support	-	-	0.50	-	-	
Project Management	-	-	-	-	-	
Sub-total (BNL)	0.50	0.50	2.49	1.30	1.30	6.08
Fermilab						
Site Management	0.20	0.20	0.20	0.20	0.20	
Steady-state Operations Support	2.70	2.58	2.11	2.04	1.84	
Deployment Planning	2.70	- 2.30	2.11	0.30	1.04	
Deployment Support	-	_	_	0.50	_	
Project Management	0.35	0.35	0.35	0.35	0.35	
Sub-total (FNAL)	3.25	3.13	2.66	3.39	2.39	14.83
	2.90	2.78	2.31	3.04	2.04	11100
Thomas Jefferson National Accelerator Facili	ity					
Site Management	0.20	0.20	0.20	0.20	0.20	
Steady-state Operations Support	3.04	2.40	1.93	1.79	1.39	
Deployment Planning	-	0.30	-	-	0.30	
Deployment Support	-	0.50	-	-	0.50	
Project Management	-	-	-	-	-	
Sub-total (JLab)	3.24	3.40	2.13	1.99	2.39	13.15
Total	0.50	0.50	0.70	0.60	0.60	
Site Management	0.50	0.50	0.70	0.60	0.60	
Steady-state Operations Support	6.14	5.38	4.44	3.83	3.24	
Deployment Planning	-	0.30	0.30	0.30	0.30	
Deployment Support	-	0.50	0.50	0.50	0.50	
Project Management	0.35	0.35 7.03	0.35 6.29	0.35	0.35	30.88
1 otal =						30.88
	6.64	6.68	5.94	5.23	4.64	
Total agrees with TPC Summary?	Yes	Yes	Yes	Yes	Yes	

(as of 09/10/2016)

Brookhaven National Laboratory

LEVEL OF EFFORT (FTEs)		BG,	Q+Cluster			
	<u>FY15</u>	FY16	<u>FY17</u>	<u>FY18</u>	<u>FY19</u>	Total
Site Management	0.10	0.10	0.30	0.20	0.20	0.90
Steady-state Operations Support (BG/Q)	0.40	0.40	0.40	-	-	1.20
Steady-state Operations Support (Cluster)	-	-	0.99	1.10	1.10	3.18
Deployment Planning	-	-	0.30	-	-	0.30
Deployment Support	-	-	0.50	-	-	0.50
Project Management	-	-	-	-	-	-
Total	0.50	0.50	2.49	1.30	1.30	6.08

	This FY15 co	lumn has not				
BUDGET	been updated	with actuals				
	(closed)	(allocated)				
	<u>FY15</u>	<u>FY16</u>	<u>FY17</u>	<u>FY18</u>	<u>FY19</u>	<u>Total</u>
Steady-state Operations						
Personnel	76,482	78,776	397,967	312,684	322,065	1,187,974
Site Management	17,510	18,035	89,131	61,203	63,039	248,919
Operations Support	58,972	60,741	308,836	251,481	259,026	939,055
Travel	3,000	3,000	3,000	3,000	3,000	15,000
M&S	201,000	201,000	66,000	40,000	40,000	548,000
(Hardware, repairs, spares, tapes, etc.)	20,000	20,000	35,000	40,000	40,000	
IBM BG/Q Maintenance; FY17 BG/Q Parts	181,000	181,000	31,000	-	-	393,000
Total (Steady-state Ops)	280,482	282,776	466,967	355,684	365,065	1,750,974
New Hardware Deployment						
Personnel	_	_	204,444	-	-	204,444
Deployment Planning			93,075		_	93,075
Deployment Support			111,369			111,369
Travel			111,509			-
Equipment (compute)	-	-	779,171	-	-	779,171
Equipment (storage)	-	-	51,945	-	-	51,945
Total (New Deployment)	-	-	1,035,560	-	-	1,035,560
Project Management						
Personnel						_
Travel						_
M&S						_
Total (Project Mgmt)	-	-	-	-	-	-
Total Site Allocation						
Personnel	76,482	78,776	602,411	312,684	322,065	1,392,418
Travel	3,000	3,000	3,000	312,084	322,003	1,392,418
M&S	201,000	201,000	5,000 66,000	40,000	3,000 40,000	548,000
Equipment	201,000	201,000	831,115	40,000	40,000	348,000 831,115
Total	280.482	282,776	1,502,526	355,684	365.065	2,786,534
1 Utal	200,402	202,170	1,304,340	333,004	303,005	4,700,554

LQCD-Ext II Cost Forecast - \$14 Million (as of 09/10/2016)

Fermilab

LEVEL OF EFFORT (FTEs)

LEVEL OF EFFORT (FIES)						
	<u>FY15</u>	<u>FY16</u>	<u>FY17</u>	<u>FY18</u>	<u>FY19</u>	<u>Total</u>
Site Management	0.20	0.20	0.20	0.20	0.20	
Steady-state Operations Support	2.70	2.58	2.11	2.04	1.84	
Deployment Planning	-	-	-	0.30	-	
Deployment Support	-	-	-	0.50	-	
Project Management	0.35	0.35	0.35	0.35	0.35	
Total	3.25	3.13	2.66	3.39	2.39	14.83

BUDGET

This FY15 column has not been updated with actuals

	(closed)	(allocated)				
	<u>FY15</u>	<u>FY16</u>	<u>FY17</u>	<u>FY18</u>	<u>FY19</u>	<u>Total</u>
Steady-state Operations						
Personnel	744,828	853,525	718,050	718,984	676,876	3,712,263
Site Management	59,896	76,486	78,781	81,144	83,579	379,886
Operations Support	684,932	777,039	639,269	637,840	593,298	3,332,377
Travel	5,000	5,000	5,000	5,000	5,000	25,000
M&S (hardware, repairs, tape, etc.)	40,000	56,786	40,000	40,000	40,000	216,786
Total (Steady-state Ops)	789,828	915,311	763,050	763,984	721,876	3,954,049
New Hardware Deployment						
Personnel	-	-	-	277,829	-	277,829
Deployment Planning	-	-	-	121,716	-	121,716
Deployment Support	-	-	-	156,112	-	156,112
Travel	-	-	-	-	-	-
M&S (compute hardware)	-	-	-	825,323	-	825,323
M&S (storage hardware)	-	-	17,315	53,825	21,454	92,595
Total (New Deployment)	-	-	17,315	1,156,977	21,454	1,195,746
Project Management						
Personnel	110,298	127,351	131,172	135,107	139,160	643,089
Travel	6,000	6,000	6,000	7,000	7,000	32,000
M&S	2,000	2,000	2,000	2,000	2,000	10,000
Total (Project Mgmt)	118,298	135,351	139,172	144,107	148,160	685,089
Total Site Allocation						
Personnel	855,126	980,876	849,222	1,131,920	816,037	4,633,181
Travel	11,000	11,000	11,000	12,000	12,000	57,000
M&S (SS Ops)	42,000	58,786	42,000	42,000	42,000	226,786
M&S (DME)	-	-	17,315	879,148	21,454	917,917
Total	908,126	1,050,662	919,537	2,065,068	891,491	5,834,884

(as of 09/10/2016)

Thomas Jefferson National Accelerator Facility

LEVEL OF EFFORT (FTE-yrs)

	<u>FY15</u>	<u>FY16</u>	<u>FY17</u>	<u>FY18</u>	<u>FY19</u>	Total
Site Management	0.20	0.20	0.20	0.20	0.20	
Steady-state Operations Support	3.04	2.40	1.93	1.79	1.39	
Deployment Planning	-	0.30	-	-	0.30	
Deployment Support	-	0.50	-	-	0.50	
Project Management	-	-	-	-	-	
Total	3.24	3.40	2.13	1.99	2.39	13.15
Total					,	

This FY15 column has not

BUDGET	been updated with actuals									
BUDGET	-									
	(closed)	(allocated)								
	<u>FY15</u>	<u>FY16</u>	<u>FY17</u>	<u>FY18</u>	<u>FY19</u>	<u>Total</u>				
Steady-state Operations										
Personnel	702,994	519,189	430,700	419,029	347,676	2,419,589				
Site Management	71,070	58,400	60,152	61,957	63,815	315,394				
Operations Support	631,924	460,789	370,548	357,072	283,861	2,104,195				
Travel	3,000	3,000	3,000	3,000	3,000	15,000				
M&S (hardware, repairs, tape, etc.)	40,000	40,000	40,000	40,000	40,000	200,000				
Total (Steady-state Ops)	745,994	562,189	473,700	462,029	390,676	2,634,589				
New Hardware Deployment										
Personnel	-	198,800	-	-	215,398	414,198				
Deployment Planning	-	103,800	-	-	113,425	217,225				
Deployment Support	-	95,000	-	-	101,973	196,973				
Travel	-	-	-	-	-	-				
M&S (compute hardware)	-	992,175	-	-	986,897	1,979,072				
M&S (storage hardware)	-	50,359	17,315	17,942	64,363	149,979				
Total (New Deployment)	-	1,241,334	17,315	17,942	1,266,658	2,543,248				
Project Management										
Personnel	-	-	-	-	-	-				
Travel	-	-	-	-	-	-				
M&S	-	-	-	-	-	-				
Total (Project Mgmt)	-	-	-	-	-	-				
Total Site Allocation										
Personnel	702,994	717,989	430,700	419,029	563,074	2,833,787				
Travel	3,000	3,000	3,000	3,000	3,000	15,000				
M&S (SS Ops)	40,000	40,000	40,000	40,000	40,000	200,000				
M&S (DME)	-	1,042,534	17,315	17,942	1,051,260	2,129,050				
Total	745,994	1,803,523	491,015	479,971	1,657,334	5,177,837				

(as of 09/10/2016)

Management Reserve

Baseline management reserve is set at a % of the s deployment personnel budget. % of steady-state ops budget	steady-state oper 3%	rations personne	el budget plus a	% of the new h	ardware	
% of new hardware deployment budget	20%					
Reference Values (from TPC Summary)	<u>FY15</u>	<u>FY16</u>	<u>FY17</u>	<u>FY18</u>	<u>FY19</u>	<u>Total</u>
Steady-state Operations Personnel Budget	1,543,737	1,451,490	1,546,717	1,450,697	1,346,617	7,339,258
New Hardware Deployment Personnel Budget	-	198,800	204,444	277,829	215,398	896,471
Management Reserve Budget	FY15	FY16	FY17	FY18	FY19	Total
Baseline Budget	46.312	83,305	87.290	99.087	83.478	399,472
Adjustments		00,000	07,270	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	00,110	0,,,,,
Adjustment in management reserve to						
balance the budget to the guidance	(17,597)					(17,597)
07/01/14 adjustment to offset reduction in						
JLab salary support correlating with node						
count adjustment	17,249	(244)	(254)	(194)		16,557
07/01/14 adjustment to offset salary						
adjustments due to change in hardware split						
from 60:40 to 50:50.	-	(22)	(116)	383	2,635	2,880

45,964

TOTAL

83,039 86,920 99,276

86,113 401,312

	Α	во	D	E	E .	G	н		1	к		М	N	0	Р	0	R	S
1	~		U	L L	F	9		LOCD-Ext II (Cost Forecast - \$1		L	IVI	IN	0	F	Q	ĸ	3
2									of 09/10/2016)									
3					1			(us	0,07/10/2010/			De la francis d'anna a	a state and a state state.	A second at a second				
												Red font indicates	s changes since las	st revision.				
4									Staffing Model									
5								Upo	dated 8/05/2015									
6																		
7		Assumptions:						Basis:						Planned Site I	Deployments			Number of D
8			overall project r			/ 1. 1 / / 1.		Based on operat										
9 10			manage BNL sit			(site specific)		Based on operat					EY15	FNAL 0	JLab 0	BNL	EY15	FNAL 5
			manage cluster		ab)	(site specific)		Based on operat							0	0		
11 12			blan, manage de deploy new hard					See assumptions					FY16 FY17	0	1	0	FY16 FY17	5
12													FY17 FY18	0	0	1	FY17 FY18	4
13			additional suppo		s & maint.; and to		ting	Based on operat		o deploy new GF	PU cluster (Jan '14	->)	FY18 FY19	1	0	0	FY18 FY19	4
14					rt (Lustre/mass s		use			came lovel as h	Idgeted in FY12-1	4)	FTIS	0		U	FTIS	4
16			uster base effor		it (Lustie/mass s	iorage)		Based on operat				+)		Y1 isolated buy	v = 1 eluctor			JLab
17					supported by or	A FTF		Based on operat							+Y2 funds = 1 cl	uctor	FY15	6.5
18					ted by one FTE						+ ort than cluster no	des			= 1 to 1.5 clusters		FY16	5.5
19					ted by one FTE						rds: 660 / fte; aver				r buy = 2 clusters		FY17	4
20					with \$1M in equi		er vear)	Based on recent			22. 500 / 110, 4701	-3 / 00.			2m = < 1 cluster (FY18	4
21					M in equipment			Based on recent									FY19	4
22					st \$500K of the				, 200 u									
23					t \$50K of the pu		0.6%	M&S G&A with n	o threshold									BNL
24					rank Quarant - C												FY15	0
25		5% Fract	on of total equip	ment budget a	located to storage	e hardware (FY	10-12)	Based on approv	ved hardware ba	seline plan							FY16	0
26		8% Fraction of total equipment budget allocated to storage hardware (FY13-19) Storage budget increased to reflect growing needs											FY17	2				
27		75% Fract	on of storage bu	dget allocated	to deployment si	te (FY13-19)							CPU Funds Split	FNAL	JLab	BNL	FY18	2
28								among non-deplo	ovment sites			T	otal Compute H/w	\$825,323	\$1,979,072	\$779,171	FY19	2
29					ng point (9q @ 3										Legend			
30								s;12k @ 168 GPU		cards)						med Infiniband clu	ter	
31								+expansion @ 31	4 nodes)						YYG: future unna			
32		280 FNAL	# of GPUs - sta	irting point (Ds	g @ 152 GPUs;	Pi0g @ 128 GP	Us)								YY/YY: designates	combined purcha	ses that span fisc	al years; treated
33											1							
34 35		Compute hardw			-	847,000		1,161,000	1,489,000	4,611,000	1		Initial Cluster No	de Counts (FN	IAL) Name		# GPUs	Cores
35		Compute na	dware budget ove	mun / (underrun)	(0) (closed)	(0) (allocated)	(1)	(1)	2	(1)			FNAL Conven		Ds	# nodes 421	# GPUS	Cores
37		-			(closed) FY15	(allocated) FY16	FY17	FY18	FY19	Total			FIVAL CONVEN	uonai Giusiers	Bc	224	0	
38		Compute hardw	ro budget (\$)		FIIJ	1,042,714	865,745	897.090	1.072.714	3.878.263	•				Pi0+Pi0 exp	314	0	
39		BG/Q compute		F (S)		1,042,714	003,743	097,090	1,072,714	3,070,203	BG/Q deplovme	nt sita			Total	959	0	
40		Cluster compute			1	992,175	779.171	825.323	986.897	3,583,565	Cluster deploym				i otai	555		
41		Storage hardwar		οι (φ)		50,539	51,945	53.825	64.363	220.672	BG/Q or Cluster		ENAI	GPU Clusters	Dsg	76	152	16
42		Storage hardwar				-	17.315	17,942	21,454	56,711				0, 0 0,00,0,0	Pi0g	32	152	16
43		Storage hardwar					17,315	-		17,315		nt/extra non-depl	oyment sites		Total	108	.02	10
44		Total equipment			-	1,042,714	865,745	897,090	1,072,714	3,878,263		dop.			. Star	.00		
45		1																
46		Overhead portion	of equipment b	udget (used be		30,456	95,838	106,400	30,636	263,331	Thresholds impa	cts total equipme	nt budget, not CPL	J/GPU separate	ely			
47																		
48		% of compute bi			100%		50%	50%	50%				Initial Cluster No	de Counts (JL	ab)			
49		Allocation for co			-	496,088	389,585	412,661	493,448	1,791,783								
50		Direct portion of c				480,859	341,666	359,461	478,130	1,660,117			JLab Conven	tional Clusters	Name	# nodes	# GPUs	Cores
						15,228	47,919	53,200	15,318	131,665	Apportioned per %	direct portion			9q	320	0	8
51		Overhead portion							493,448	1.791.783					10q	224	0	8
52		Allocation for GI	U hardware (\$)		1	496,088	389,585	412,661										16
52 53		Allocation for GI Direct portion of G	U hardware (\$) PU budget		-	496,088 480,859	389,585 341,666	359,461	478,130	1,660,117					12s	276	0	10
52 53 54		Allocation for GI	U hardware (\$) PU budget		-	496,088	389,585				Apportioned per %	direct portion					0	10
52 53 54 55		Allocation for GF Direct portion of G Overhead portion	U hardware (\$) PU budget If GPU budget		-	496,088 480,859 15,228	389,585 341,666 47,919	359,461 53,200	478,130 15,318	1,660,117 131,665	Apportioned per %	direct portion			12s Total	276 820		
52 53 54 55 56		Allocation for GF Direct portion of G Overhead portion Estimated # of c	U hardware (\$) PU budget if GPU budget uster nodes pur	chased	-	496,088 480,859 15,228 108	389,585 341,666 47,919 77	359,461 53,200 81	478,130 15,318 108	1,660,117 131,665 374	Apportioned per %	direct portion	JLab Accele	rated Clusters	12s Total 9g	276 820 36	144	8
52 53 54 55 56 57		Allocation for GF Direct portion of G Overhead portion	U hardware (\$) PU budget if GPU budget uster nodes pur	chased	-	496,088 480,859 15,228	389,585 341,666 47,919	359,461 53,200	478,130 15,318	1,660,117 131,665	Apportioned per %	direct portion	JLab Accele	rated Clusters	12s Total 9g 10g	276 820 36 50	144 200	
52 53 54 55 56 57 58		Allocation for GI Direct portion of G Overhead portion Estimated # of c Estimated # of G	U hardware (\$) PU budget of GPU budget uster nodes pur PUs purchased	chased	-	496,088 480,859 15,228 108	389,585 341,666 47,919 77	359,461 53,200 81	478,130 15,318 108	1,660,117 131,665 374	Apportioned per %	direct portion	JLab Accele	rated Clusters	125 Total 9g 10g 11g	276 820 36 50 7	144 200 28	8 8 8
52 53 54 55 56 57 58 59		Allocation for GI Direct portion of G Overhead portion Estimated # of c Estimated # of G Actual cluster	U hardware (\$) PU budget of GPU budget uster nodes pur PUs purchased nodes purchase	chased	-	496,088 480,859 15,228 108	389,585 341,666 47,919 77	359,461 53,200 81	478,130 15,318 108	1,660,117 131,665 374	Apportioned per %	direct portion	JLab Accele	rated Clusters	125 Total 9g 10g 11q 12k	276 820 36 50 7 42	144 200 28 168	8 8 8 16
52 53 54 55 56 57 58 59 60		Allocation for GI Direct portion of G Overhead portion Estimated # of c Estimated # of G Actual cluster Actual GPU	U hardware (\$) PU budget of GPU budget uster nodes pur PUs purchased nodes purchase	chased d	-	496,088 480,859 15,228 108	389,585 341,666 47,919 77	359,461 53,200 81	478,130 15,318 108	1,660,117 131,665 374	Apportioned per %	direct portion	JLab Accele	rated Clusters	12s Total 9g 10g 11g 12k 12k	276 820 36 50 7 42 16	144 200 28	8 8 8
52 53 54 55 56 57 58 59 60 61		Allocation for GI Direct portion of G Overhead portion Estimated # of c Estimated # of G Actual cluster Actual GPU	U hardware (\$) PU budget of GPU budget uster nodes pur PUs purchased nodes purchase	chased d	-	496,088 480,859 15,228 108	389,585 341,666 47,919 77	359,461 53,200 81	478,130 15,318 108	1,660,117 131,665 374	Apportioned per %	direct portion	JLab Accele	rated Clusters	125 Total 9g 10g 11q 12k	276 820 36 50 7 42	144 200 28 168	8 8 8 16
52 53 54 55 56 57 58 59 60 61 62		Allocation for GI Direct portion of G Overhead portion Estimated # of c Estimated # of G Actual cluster Actual GPU	U hardware (\$) PU budget if GPU budget uster nodes pur PUs purchased nodes purchase GPUs purchase	chased d d d	-	496,088 480,859 15,228 108 77 -	389,585 341,666 47,919 77 55 -	359,461 53,200 81 58 - -	478,130 15,318 108 77	1,660,117 131,665 374 266	Apportioned per %	direct portion	JLab Accele		12s Total 9g 10g 11g 12k 12m Total	276 820 36 50 7 42 16 151	144 200 28 168 64	8 8 16 16
52 53 54 55 56 57 58 59 60 61 62 63		Allocation for GI Direct portion of G Overhead portion Estimated # of c Estimated # of G Actual cluster Actual GPU	U hardware (\$) PU budget if GPU budget uster nodes pur PUs purchased nodes purchase GPUs purchase GPUs purchase	chased d d d nondep storage		496,088 480,859 15,228 108 77 - - - 50,539	389,585 341,666 47,919 77 55 - - - 86,575	359,461 53,200 81 58 - - - 71.767	478,130 15,318 108 77 - - - 85,817	1,660,117 131,665 374 266 - - - 294,698	Apportioned per %	direct portion	JLab Accele		12s Total 9g 10g 11g 12k 12k	276 820 36 50 7 42 16 151	144 200 28 168 64	8 8 16 16
52 53 54 55 56 57 58 59 60 61 62		Allocation for GI Direct portion of G Overhead portion Estimated # of c Estimated # of G Actual cluster Actual GPU	U hardware (\$) PU budget if GPU budget uster nodes pur PUs purchased nodes purchase GPUs purchase GPUs purchase	chased d d d		496,088 480,859 15,228 108 77 -	389,585 341,666 47,919 77 55 -	359,461 53,200 81 58 - -	478,130 15,318 108 77	1,660,117 131,665 374 266	Apportioned per %	direct portion	JLab Accele		12s Total 9g 10g 11g 12k 12m Total	276 820 36 50 7 42 16 151	144 200 28 168 64	8 8 16 16