U.S. ATLAS Upgrade Estimate
WBS Profile Estimates

Funding All **Funding Type:** Research Program 1/31/2007 2:48:18 PM

Institutions: All **Estimate in AY $k** **Labor/Material:** Both

WBS Number	Description	FY 07 (k$)	FY 08 (k$)	FY 09 (k$)	FY 10 (k$)	FY 11 (k$)
4	U.S. ATLAS Upgrade Estimate	3078	3155	3156	3156	3155
4.1	Inner Detector Upgrade R&D	2015	2083	1859	1889	1835
4.1.1	Detectors	456	541	307	237	243
4.1.1.1	Innermost Pixel Layer	251	204	68	0	0
4.1.1.2	Investigation of Strip Technology	120	111	0	0	0
4.1.1.3	Short Strips	85	225	239	237	243
4.1.2	Front-End Electronics	504	551	548	397	324
4.1.2.1	Deep Sub Micron for Pixels	338	277	267	109	0
4.1.2.2	SiGe for Strips	166	274	281	288	324
4.1.3	Optical Readout	300	292	278	443	481
4.1.3.1	Diode Receivers	91	81	0	0	0
4.1.3.2	Fiber Drivers	209	127	191	250	256
4.1.3.3	Fibers	0	0	0	0	0
4.1.3.4	Multiplexers and Interconnect	0	85	87	193	225
4.1.4	Modules	755	699	726	812	787
4.1.4.1	Stave Structures	410	360	416	518	497
4.1.4.2	Hybrids	30	50	46	47	36
4.1.4.3	Cooling Channels	115	164	211	216	222
4.1.4.4	Powering Schemes	200	126	54	32	33

WBS Number	Description	FY 07 (k$)	FY 08 (k$)	FY 09 (k$)	FY 10 (k$)	FY 11 (k$)
4.3	Liquid Argon Upgrade R&D	1053	1072	1297	1267	1320
4.3.1	Layer Buildup due to Radiation	85	31	32	0	0
4.3.2	Readout Electronics	708	784	939	922	910
4.3.2.1	Study of System Architecture	0	0	107	35	51
4.3.2.2	Development of Analog Front-End	260	283	290	273	248
4.3.2.3	Digital Readout System	288	346	382	428	440
4.3.2.4	Optical Data Link	160	155	160	185	173
4.3.3	Trigger	0	0	62	64	65
4.3.3.1	L1 Trigger Interface	0	0	62	64	65
4.3.3.2	Analog Optical Link for L1 Trigger	0	0	0	0	0
4.3.4	Next Generation ROD	150	144	148	152	198
4.3.4.1	Development of new Rod - BNL	125	119	122	125	171
4.3.4.2	Development of new ROD-Arizona	25	26	26	27	28
4.3.5	Rad Hard LV Power Supplies	110	113	116	129	145
4.5	Radiation Monitors-Arizona	10	0	0	0	0