

U.S. ATLAS E.T.C. WBS Profile Estimates

Funding Source: All

Funding Type: Project

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Institutions: Ohio State U.

WBS Number	Description	FY 96 (k\$)	FY 97 (k\$)	FY 98 (k\$)	FY 99 (k\$)	FY 00 (k\$)	FY 01 (k\$)	FY 02 (k\$)	FY 03 (k\$)	FY 04 (k\$)	FY 05 (k\$)	Total (k\$)
1.1.1	Pixels	0	0	0	0	0	0	143	202	30	0	375
1.1.1.1	Mechanics and Final Assembly	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.1	Design	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.1.1	Prototype Design	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.1.1.1	Design - LBNL	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.1.1.2	Design - HYTEC, Inc.	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.1.2	Production Design	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.1.2.1	Sectors	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.1.2.2	Disk Support Rings and Mo	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.1.2.3	Support Frame	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.1.2.4	Support Tube	0	0	0	0	0	0	0	0	0	0	0

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1.1.1.1.1.2.5	Services	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.1.2.5.1	Services Design - New Mex	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.1.2.5.2	Services Design - LBNL	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.1.2.6	Disk Assembly	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.1.2.7	Final Assembly	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.1.2.8	Test Equipment	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.1.2.9	Integration/Project Enginee	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.1.2.10	Installation	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.2	Development and Prototypes	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.2.1	Disk Sectors	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.2.2	Disk Support Rings	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.2.3	Support Frame	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.2.4	Support Tube	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.2.5	Services	0	0	0	0	0	0	0	0	0	0	0

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1.1.1.1.2.5.1	Cables and Connections	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.2.5.2	Coolant Connections	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.2.6	Disk Assembly	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.2.7	Final Assembly and Installa	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.2.8	Test Equipment	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.3	Production	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.3.1	Disk Sectors	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.3.2	Disk Support Rings	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.3.3	Support Frame	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.3.4	End Plate Stiffener and Pix	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.3.5	Support Tube	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.3.6	Endplug Thermal Barrier	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.3.7	Services	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.3.7.1	Mechanical support	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.3.7.2	Cables and Connections	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.3.7.3	Coolant pipes and connect	0	0	0	0	0	0	0	0	0	0	0

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1.1.1.1.3.7.4	Patch Panel 0	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.3.8	Disk Assembly	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.3.9	Disk Region Final Assembl	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.3.10	Test Equipment	0	0	0	0	0	0	0	0	0	0	0
1.1.1.1.3.11	Installation	0	0	0	0	0	0	0	0	0	0	0
1.1.1.2	Sensors	0	0	0	0	0	0	0	0	0	0	0
1.1.1.2.1	Design/Engineering	0	0	0	0	0	0	0	0	0	0	0
1.1.1.2.1.1	Test design	0	0	0	0	0	0	0	0	0	0	0
1.1.1.2.1.1.1	Design - New Mexico	0	0	0	0	0	0	0	0	0	0	0
1.1.1.2.3	Production	0	0	0	0	0	0	0	0	0	0	0
1.1.1.2.3.1	Barrels, Disks and B-layer(0	0	0	0	0	0	0	0	0	0	0
1.1.1.2.3.1.1	Preproduction	0	0	0	0	0	0	0	0	0	0	0
1.1.1.2.3.1.1.1	Preproduction costs - Alba	0	0	0	0	0	0	0	0	0	0	0
1.1.1.2.3.1.1.2	Preproduction - Ohio State	0	0	0	0	0	0	0	0	0	0	0
1.1.1.2.3.1.1.3	Preproduction - Oklahoma	0	0	0	0	0	0	0	0	0	0	0

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1.1.1.2.3.1.2	Production	0	0	0	0	0	0	0	0	0	0	0
1.1.1.2.3.1.3	Testing	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3	Electronics	0	0	0	0	0	0	116	67	0	0	184
1.1.1.3.1	Design/Engineering	0	0	0	0	0	0	29	15	0	0	44
1.1.1.3.1.1	IC design	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.1.1.1	Design - LBNL	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.1.1.1.1	Senior Engineering	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.1.1.1.2	Junior Engineering	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.1.1.2	Design-OSU	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.1.2	Test design	0	0	0	0	0	0	29	15	0	0	44
1.1.1.3.1.2.1	LBL Engineering	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.1.2.2	OSU Engineering	0	0	0	0	0	0	29	15	0	0	44
1.1.1.3.1.3	Systems Engineering	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.2	Development and Prototypes	0	0	0	0	0	0	64	0	0	0	64
1.1.1.3.2.1	Atmel/DMILL prototypes	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.2.1.1	FE-D2	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.2.1.2	FE-D3	0	0	0	0	0	0	0	0	0	0	0

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1.1.1.3.2.2	Honeywell	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.2.3	0.25 Micron	0	0	0	0	0	0	64	0	0	0	64
1.1.1.3.2.3.1	TSMC and IBM prototypes	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.2.3.2	1st prototype	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.2.3.3	2nd prototype	0	0	0	0	0	0	64	0	0	0	64
1.1.1.3.2.4	Test Equipment/Hardware/	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.2.4.1	Equipment/Test Boards	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.3	Production	0	0	0	0	0	0	23	53	0	0	76
1.1.1.3.3.1	Front-end ICs	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.3.1.1	Outer system	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.3.1.1.1	Layer1/2x1 disk	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.3.1.1.2	IBM	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.3.1.2	B-layer	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.3.1.3	FE Testing	0	0	0	0	0	0	0	0	0	0	0
1.1.1.3.3.2	Optoelectronics	0	0	0	0	0	0	23	53	0	0	76
1.1.1.3.3.2.1	Production	0	0	0	0	0	0	0	26	0	0	26
1.1.1.3.3.2.2	Testing, Dicing and Sorting	0	0	0	0	0	0	23	26	0	0	49
1.1.1.4	Flex Hybrids/Optical Hybrids	0	0	0	0	0	0	27	85	5	0	117

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1.1.1.4.1	Design/Engineering	0	0	0	0	0	0	0	0	0	0	0
1.1.1.4.1.1	Prototype design	0	0	0	0	0	0	0	0	0	0	0
1.1.1.4.1.1.1	Flex hybrid	0	0	0	0	0	0	0	0	0	0	0
1.1.1.4.1.1.2	Pigtail	0	0	0	0	0	0	0	0	0	0	0
1.1.1.4.1.1.3	Optical Hybrids	0	0	0	0	0	0	0	0	0	0	0
1.1.1.4.1.2	Production design	0	0	0	0	0	0	0	0	0	0	0
1.1.1.4.1.2.1	Flex Hybrid	0	0	0	0	0	0	0	0	0	0	0
1.1.1.4.1.2.2	Pigtail	0	0	0	0	0	0	0	0	0	0	0
1.1.1.4.1.2.3	Optical components	0	0	0	0	0	0	0	0	0	0	0
1.1.1.4.2	Development and Prototypes	0	0	0	0	0	0	17	24	0	0	41
1.1.1.4.2.1	Flex hybrids	0	0	0	0	0	0	0	0	0	0	0
1.1.1.4.2.2	Optical prototypes	0	0	0	0	0	0	17	24	0	0	41
1.1.1.4.2.3	Pigtails prototypes	0	0	0	0	0	0	0	0	0	0	0
1.1.1.4.3	Production	0	0	0	0	0	0	10	61	5	0	76
1.1.1.4.3.1	Flex hybrid	0	0	0	0	0	0	0	0	0	0	0
1.1.1.4.3.1.1	Bare Flex Hybrids	0	0	0	0	0	0	0	0	0	0	0
1.1.1.4.3.1.2	Components and Assembl	0	0	0	0	0	0	0	0	0	0	0
1.1.1.4.3.1.3	Testing	0	0	0	0	0	0	0	0	0	0	0
1.1.1.4.3.1.3.1	Albany	0	0	0	0	0	0	0	0	0	0	0

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1.1.1.4.3.1.3.2	Oklahoma	0	0	0	0	0	0	0	0	0	0	0
1.1.1.4.3.2	Pigtails	0	0	0	0	0	0	0	0	0	0	0
1.1.1.4.3.3	Optical hybrids	0	0	0	0	0	0	10	61	5	0	76
1.1.1.4.3.3.1	Optical packages and com	0	0	0	0	0	0	0	0	0	0	0
1.1.1.4.3.3.2	Optical hybrids	0	0	0	0	0	0	0	33	0	0	33
1.1.1.4.3.3.3	Testing	0	0	0	0	0	0	10	28	5	0	43
1.1.1.5	Module Assembly/Test	0	0	0	0	0	0	0	49	25	0	74
1.1.1.5.1	Design/Engineering	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.1.1	Prototype Design	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.1.2	Production Design	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.1.3	Testing Design	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.1.3.1	Mechanical Prototypes	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.1.3.2	Functional Prototypes	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.2	Development and Prototypes	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.2.1	X-ray Inspection	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.2.2	Wafer Thinning	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.2.3	Wafer Dicing and Die Sort	0	0	0	0	0	0	0	0	0	0	0

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1.1.1.5.2.4	Dummy wafers	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.2.5	Module Assembly and Test	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.2.5.1	Tooling	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.2.5.2	Assembly	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.2.5.3	Testing	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.2.5.4	Equipment	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.2.6	Module Attachment	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.2.6.1	Tooling	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.2.6.2	Assembly	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.2.6.3	Testing	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.3	Production	0	0	0	0	0	0	0	49	25	0	74
1.1.1.5.3.1	IC Wafer Thinning	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.3.2	Dicing of IC Wafers	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.3.3	IC Die Sort	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.3.4	Module Assembly	0	0	0	0	0	0	0	49	25	0	74
1.1.1.5.3.4.1	Tooling	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.3.4.2	Assembly - LBNL	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.3.4.3	Assembly - Ohio State	0	0	0	0	0	0	0	49	25	0	74
1.1.1.5.3.5	Module Testing	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.3.5.1	Bare Module Testing	0	0	0	0	0	0	0	0	0	0	0

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1.1.1.5.3.5.2	Assembled Module Testing	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.3.6	Module Attachment	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.3.7	Attach Type 0 cable to Sect	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.3.8	Sector Electrical Testing	0	0	0	0	0	0	0	0	0	0	0
1.1.1.5.3.9	Production database	0	0	0	0	0	0	0	0	0	0	0
1.1.1.6	Beam/System Test Support	0	0	0	0	0	0	0	0	0	0	0
1.1.1.6.1	Test Beam Support	0	0	0	0	0	0	0	0	0	0	0
1.1.1.6.2	System test support	0	0	0	0	0	0	0	0	0	0	0