



---

# NOvA Project Status

September 18, 2007

John Cooper

Ron Ray

Nancy Grossman



# Discussions with DOE

---

- IPT meeting last week included Robin Staffin
  - He gives a briefing at OMB on Sept 27, expects NOvA to come up
  - Explored our contingency
    - Absolute % (29% vs. some talk of “35% is more realistic”)
    - How confident are we in our contingency estimate
      - Detailed on Building, commodities
      - Management contingency got flak at Director’s Review
    - 35% requires \$ 12 M more
      - Maybe less if concentrate on FY11 problem
      - Not needed in FY09, so not such a hot potato...
    - Or 13 kt, not 15 kt
      - **BUT this is very hard to iterate before Lehman, need new quotes,....**
  - No conclusions from Robin except his observation that problems in the Lehman Review or in the EIR are not good
  - Project notes
    - We seem to have no wiggle room right now
    - If project got more funding, we would NOT change our contingency approach, will put any excess in “Management Reserve”



# Progress on matching funding profile

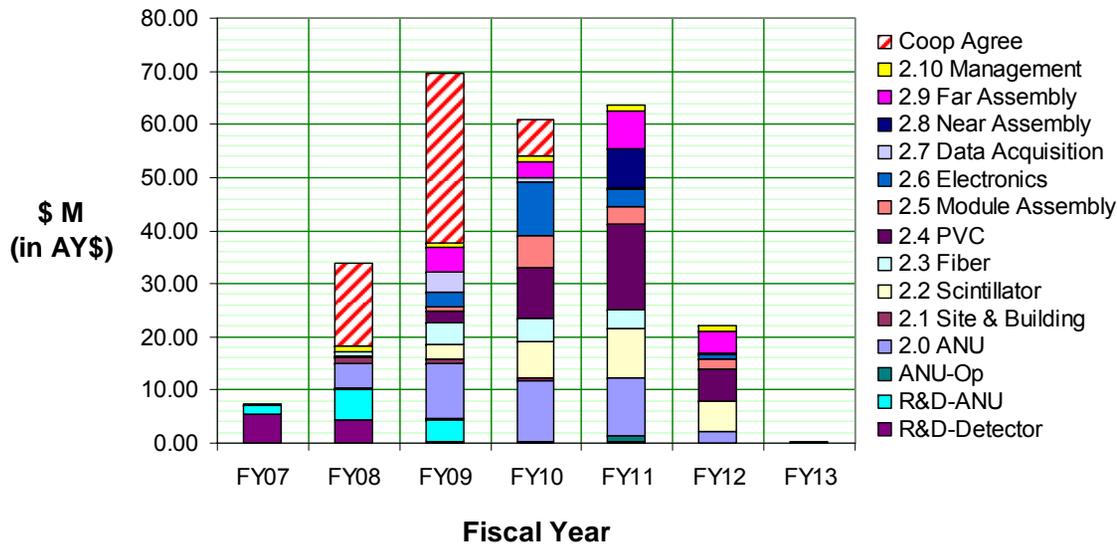
- August 24 DOE Reduced FY09 funding from \$ 70 M to \$ 65 M.
  - This was already the year in which the Cost & Schedule shown at the Director's Aug 21 Review had the project over the profile by ~ \$ 6 M in FY09.
  - So now we were over by \$ 11 M in FY09
  - This had zero contingency on management people.
- Project's first iteration changes reported in our Sept 4 WGM:
  - Moved Avalanche photodiode (APD) purchase downstream into FY10
  - Zeroed cost of ES&H people on project
  - We were then over by \$ 6.5 M in FY09
  - 15 kt complete date at Oct 9, 2012
    - 1 day change from Aug 21 Director's Review
- 2<sup>nd</sup> iteration (details on next page)
  - Moved Minneapolis module factory from FY09 start to FY10
  - We are now over by \$ 1.75 M in FY09
  - 15 kt complete date at Oct 15, 2012
    - 6 day change from Aug 21 Director's Review
- Through both iterations FY11 is still over by ~ \$ 7 M.



# 2<sup>nd</sup> Iteration (9/11) vs. funding profile

	R&D-Detec	R&D-ANU	ANU-Op	2.0 ANU	2.1 Site & Bld	2.2 Scintillator	2.3 Fiber	2.4 PVC	2.5 Module	2.6 Electro	2.7 Data A	2.8 Near A	2.9 Far Ass	2.10 Mana	Coop Agree	Totals by YR
FY07	5.57	1.45	0.18	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	7.24
FY08	4.33	5.81	0.19	4.68	0.96	0.53	0.65	0.13	0.02	0.01	0.00	0.00	0.00	0.95	15.52	33.78
FY09	0.40	4.03	0.20	10.33	1.00	2.52	4.15	2.12	1.00	2.77	3.64	0.18	4.41	0.94	32.04	69.75
FY10	0.01	0.24	0.12	11.40	0.51	6.94	4.23	9.49	6.21	10.01	0.71	0.15	3.04	0.92	6.92	60.90
FY11	0.00	0.36	1.01	11.05	0.00	9.28	3.49	15.93	3.39	3.34	0.08	7.43	7.22	0.94	0.00	63.52
FY12	0.00	0.00		2.09	0.00	5.89	0.00	5.90	1.97	0.87	0.08	0.14	4.21	0.89	0.00	22.04
FY13	0.00	0.00		0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.09	0.13	0.00	0.27
																257.49

Totals	10.31	11.89	1.70	39.57	2.48	25.16	12.53	33.61	12.59	17.00	4.51	7.91	18.98	4.77	54.49	257.49
--------	-------	-------	------	-------	------	-------	-------	-------	-------	-------	------	------	-------	------	-------	--------



	Totals by YR	Funding Profile	Delta	Integrated Delta from profile
FY07	7.24	7.97	0.73	0.73
FY08	33.78	36.05	2.27	3.00
FY09	69.75	65.00	-4.75	-1.74
FY10	60.90	73.22	12.32	10.57
FY11	63.52	46.00	-17.52	-6.95
FY12	22.04	31.76	9.72	2.78
FY13	0.27	0.00	-0.27	2.51
	257.49	260.00	2.51	

Must stay positive



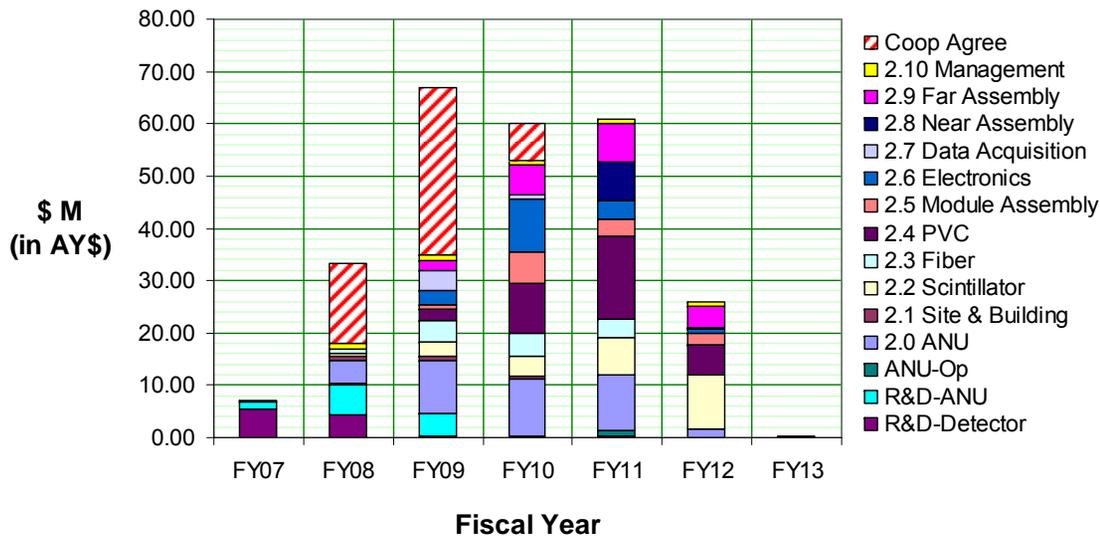
## More Progress on matching funding profile

- 3<sup>rd</sup> iteration (details on next page)
  - moved the Ash River assembly “block pivoter” assembly tool from FY09 to FY10
    - Consumed all float on this task.
  - Moved mineral oil and pseudocumene purchases to attack FY11 problem
    - 20% in FY10 (had been 40%)
    - 30% in FY11 (had been 40%)
      - So had been 80% purchased by end of FY11, now 50%
    - 50% in FY12 (had been 20%)
    - NEED at Ash River: 50% in FY11, 50% in FY12
      - So this is much more “just in time”
  - 15 kt complete date at Oct 16, 2012
    - 7 day change from Aug 21 Director’s Review -- see slide after next
- Now match profile, BUT...



# 3<sup>rd</sup> Iteration (9/17) vs. funding profile

	R&D-Detec	R&D-ANU	ANU-Op	2.0 ANU	2.1 Site & B	2.2 Scintillator	2.3 Fiber	2.4 PVC	2.5 Module	2.6 Electro	2.7 Data A	2.8 Near A	2.9 Far Ass	2.10 Mana	Coop Agree	Totals by YR
FY07	5.57	1.23	0.18	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	7.02
FY08	4.33	5.87	0.19	4.26	0.96	0.53	0.65	0.13	0.02	0.01	0.00	0.00	0.00	0.95	15.52	33.41
FY09	0.40	4.11	0.20	9.94	1.00	2.52	4.15	2.12	1.00	2.77	3.64	0.18	1.83	0.94	32.04	66.86
FY10	0.01	0.21	0.12	10.90	0.51	3.89	4.23	9.49	6.21	10.01	0.71	0.15	5.69	0.92	6.92	59.98
FY11	0.00	0.36	1.01	10.59	0.00	7.12	3.49	15.93	3.39	3.34	0.08	7.45	7.22	0.94	0.00	60.92
FY12	0.00	0.00		1.53	0.00	10.44	0.00	5.90	1.97	0.87	0.08	0.12	4.21	0.89	0.00	26.00
FY13	0.00	0.00		0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.09	0.13	0.00	0.27
																254.46



	Totals by YR	Funding Profile	Delta	Integrated Delta from profile
FY07	7.02	7.97	0.95	0.95
FY08	33.41	36.05	2.64	3.59
FY09	66.86	65.00	-1.86	1.73
FY10	59.98	73.22	13.24	14.97
FY11	60.92	46.00	-14.92	0.05
FY12	26.00	31.76	5.76	5.81
FY13	0.27	0.00	-0.27	5.54
	254.46	260.00	5.54	

All positive, but just barely in FY11



# BUT....

- ANU may be delaying the big FY11 shutdown by some months.
  - They are still checking
  - This would then couple into the Near Detector...
- The Minnesota Factory may suffer a delay in effective startup from sliding the lease date or the HVAC modifications date or the Assembly Tools ready dates into FY10
  - They are checking effect of each
  - Also checking with their procurement people
- The pivoter assembly and testing at Fermilab is now in winter (& outside)
  - Checking reality
- There are many changes at the \$ 25 K - \$ 200 K still to insert into the schedule
  - Have delayed dealing with these until we got the gross details in place
  - Probably 25-30 such changes
  - 2/3 of these are cost increases
  - Clear that almost any of them will upset the delicate FY11 balance.



# Analysis of Sept 4 Proposed Management Contingency rule

NOVA Management Contingency History					CD-2 spread of management resource types (body count, not FTEs)						
all in \$K not exactly comparable to June due to 18 --> 15 kt and shorter assembly period					%contingency off-project @ CD-2	Scientists at zero cost	Other off Project	ON Project with cost (FTE fraction) (% contingency plan)			
June 4 contingency	Aug 21 contingency	CD-2 contingency		1.0 0%				.75 - 1.0 10%	.5 - .75 15%	0 - .5 25%	
							SUM				
2.0. ANU	1,299	27	321	5%	10	-	10	-	-	1	9
2.1. Site & Bldg	25	-	-	0%	-	-	2	2	-	-	-
2.2. Scint.	-	-	24	15%	1	-	1	-	-	1	-
2.3. Fiber	-	-	6	25%	1	-	1	-	-	-	1
2.4. PVC	202	-	129	22%	2	-	3	-	-	1	2
2.5. Modules	13	-	7	1%	1	-	2	1	-	-	1
2.6. Electronics	-	-	-	n/a	1	-	-	-	-	-	-
2.7. DAQ	-	-	-	n/a	1	-	-	-	-	-	-
2.8. Near Assembly	-	17	15	25%	2	-	2	-	-	-	2
2.9. Far Assembly	472	-	33	7%	1	-	3	1	-	1	1
2.10. Management	-	-	124	4%	6	4	6	3	-	1	2
<b>Total</b>	<b>2,011</b>	<b>44</b> (≡ "0")	<b>658</b>		<b>26</b>	<b>4</b> *	<b>30</b>	<b>7</b>	<b>0</b>	<b>5</b>	<b>18</b>
ANU adjusted # of managers 9/14					* 2 ES&H, 1 Procurement, 1 Admin via Fermilab overhead (changed since Aug 21) also moved 3 people to management June 4 - now						

- Only half of the “CD-2 contingency” is in the Sept 17 version of the schedule



# TDR update status

NOVA Technical Design Report Status		Size (pages)	Status of May 25 draft	Status of Sept draft	Size (pages)
	<b>Cover &amp; Preface</b>	2	"done"	10-Sep	2
	<b>Author List</b>	2	"done"	"done", no change	2
	<b>Table of Contents</b>	18	at start of each Ch		8
Ch 1	<b>Executive summary</b> (John)	2	"done"	10-Sep	2
Ch 2	<b>Using the NuMI beam for NOVA</b> (Gary and Mark)	5	"done"	started	
Ch 3	<b>Updated Science Case</b> (Gary and Mark)	13	"done"	started	
Ch 4	<b>NOVA Scientific Design Criteria</b> (Gary and Mark)	6	"done"	started	
Ch 5	<b>Overview of NOVA Design</b> (John)	20	"done"	started	
Ch 6	<b>Performance of the NOVA Design</b> (John, Leon, Peter S)	23	"done"	started	
Ch 7	<b>Work Breakdown Structure</b> (Ron)	15	"done"	add milestone list & dictionary?	
Ch 8	<b>Accelerator and NuMI Beamline</b> (Nancy)	109	"done"	have Beam, NuMI (9/10), Recycler (9/14), MI(9/17) parts, need to fold together	
Ch 9	<b>Site and Far Detector Hall</b> (Steve)	34	"done"	10-Sep	37
Ch 10	<b>Liquid Scintillator</b> (Stuart)	30	"done"	14-Sep	
Ch 11	<b>Fiber</b> (Carl)	12	"done"	started	
Ch 12	<b>Extrusions</b> (Rich)	36	"done"	started	
Ch 13	<b>PVC Modules</b> (Ken)	56	"done"	10-Sep	53
Ch 14	<b>Photodetector &amp; Electronics</b> (Leon)	23	"done"	10-Sep	25
Ch 15	<b>DAQ System</b> (Leon)	24	"done"	13-Sep	25
Ch 16	<b>Near Detector Assembly</b> (Peter L)	9	"done"	10-Aug	11
Ch 17	<b>Far Detector Assembly</b> (Dave A)	160	"done"	10-Sep	177
Ch 18	<b>Cost, Schedule, Scope</b> (John)	0	missing		
Ch 19	<b>Risk &amp; Opportunity Management</b> (John)???			new item?	
Appendix A	<b>Guide to Project Documents</b> (Ron)	4	"done"		
	<b>TOTAL</b>	<b>603</b>			<b>342</b>

- About half done on first draft of update
  - 18 kt → 15 kt plus all other changes accumulated over the summer (75% fluors,...)
- Would Ch 19 be useful ?



# Cooperative Agreement Status

- September 10: Edward Wink, Associate Vice President for Research, UMinn
  - Your clarification of the definitions of "Decommissioning" and "Decontamination" was helpful. The DOE's revisions of the University of Minnesota's proposed clauses: Ownership of the Far Detector and Decontamination and/or Decommissioning (D&D) Costs have been reviewed and discussed as well as the revised Real Property clause. As an authorized institutional official, I accept the DOE revisions on behalf of the Regents of the University of Minnesota.
- September 11: Barbara J. Lewandowski, Chicago
  - Our office is now processing the internal deviation so the University can be given unconditional title to the building at time of award and we will then forward the award package to DOE-HQ for its final review. We anticipate that an award will be made by the end of this month and will advise you when we receive authorization from DOE-HQ to sign the document.
- Fermilab – U of Minn MOU on CA
  - Waiting for Marvin on a 3<sup>rd</sup> draft return of John's 2<sup>nd</sup> draft
  - Pepin has provided a list of additional topics which should be covered in a 4<sup>th</sup> draft
  - Goal is to get Marvin and John to sign by Oct 1 – 10
  - seek all other signatures after that & perhaps after Lehman is here.



# EA Status

---

- **EA W was submitted with signatures on Aug 31**
  - This is an Appendix to the federal EA
  - Minnesota Environmental Quality Board publication date **WAS** Sept 10.
  - This **started** the 30 day public comment clock.
  - A public meeting has been scheduled for Sept 26 in Orr, Minn.
- **EA is still in preparation**
  - Sally Arnold has assembled a final single set of comments and suggestions to Chapter 1 – 4
    - John is reading it
  - Larry Luckett (URS) is back on NOvA tasks this week and next week.
    - Will look at Ch 1- 4
    - Will finish Ch 6
- **Recall we promised to notify nearest neighbors about the EA two weeks before it gets officially submitted**
  - Seems to imply a schedule like:
    - Notify neighbors, now perhaps in October? (was Sept 21 at last WGM)
    - Submit EA, perhaps Oct 15? (was Oct 5 at last WGM)
    - That starts the federal 30 day clock which would then be in process when Lehman is here.



# Other Documents

<b>NOvA Document List for CD-2</b>	<b>comments</b>
Project Execution Plan	Pepin has an update
Acquisition Strategy	need to see if we are following it
Project Management Plan	modifying change control
Configuration Management & Change Control Plan	Elaine has a major new version
Risk Management Plan	done
Risk Registry	Nancy has WelcomeRisk, updating
High risks documented in detail	most in place, some missing
Procurement Plan	Ron has updated this one (new quantities, building?)
"laboratory" Performance Management System Document (EVMS)	in place for reviews? (Will be revised by January?)
Performance Management System Document (EVMS)	need short NOvA specific document
QA Plan	done, revised Feb 22
EA	discussed above
updated Hazard Analysis	done
draft PSAD	Keith and Mike have one
Security Vulnerability Assessment Report	have it
Laboratory doc on High Performance Sustainable Bldg considerations	have FESS Sustainable Design Review Procedure
NOvA doc on High Performance Sustainable Bldg considerations	LEED checklist by project team @ CD-3
Monthly reports	Now have through June 2007
Technical Design Report	revising, see previous slide
RLS	already discussed
BOEs	in place, need to review all for 15 kt.
Startup Plan	Nancy has a draft based on Jlab's

- Probably missed some....



## Update: Need additional help

---

- Docdb approval path
  - But it has flaws and we need these flaws corrected ASAP
  - Requires Eric Vaandering and effort reporting to CD instead of CMS
  - **Kurt Biery is assigned as NOvA liaison**
    - **He and Alan Wehmann have talked about the required changes.**



Backup slides

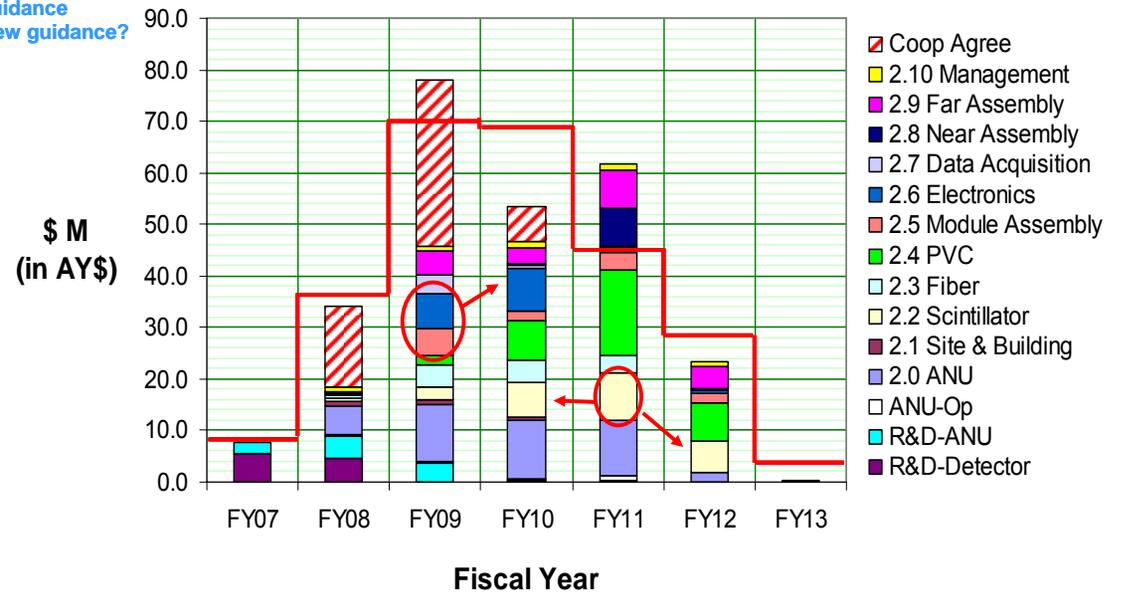


# Recall from Aug 21 Review:

	Totals by YR	Funding Profile	Delta	Integrated Delta from profile	Needs to Stay positive
FY07	7.8	8.0	0.2	0.2	
FY08	34.1	36.0	1.9	2.1	
FY09	78.0	70.0	-8.0	-5.9	←
FY10	53.6	69.0	15.4	9.5	
FY11	61.8	45.0	-16.8	-7.2	←
FY12	23.4	28.2	4.8	-2.4	←
FY13	0.3	3.8	3.5	1.1	
	258.9	260.0	1.1		

Arbitrary shift of shortfall from original FY07 10.3 M guidance into FY13, could get new guidance?

Initial thoughts on changes in red circles:





# Aug 21 Schedule with new profile

	R&D-Detec	R&D-ANU	ANU-Op	2.0 ANU	2.1 Site & Bu	2.2 Scintillator	2.3 Fiber	2.4 PVC	2.5 Module	2.6 Electro	2.7 Data A	2.8 Near A	2.9 Far Ass	2.10 Mana	Coop Agree	Totals by YR
FY07	5.58	2.01	0.19	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	7.81
FY08	4.58	4.44	0.18	5.55	0.96	0.51	0.65	0.12	0.09	0.31	0.00	0.00	0.00	1.17	15.52	34.08
FY09	0.11	3.62	0.20	10.98	1.00	2.52	4.15	2.08	5.23	6.61	3.66	0.18	4.40	1.17	32.04	77.95
FY10	0.01	0.35	0.17	11.54	0.51	6.91	4.23	7.47	2.10	8.15	0.77	0.15	3.08	1.21	6.92	53.59
FY11	0.00	0.36	1.00	10.48	0.00	9.28	3.49	16.55	3.36	1.09	0.08	7.53	7.32	1.24	0.00	61.78
FY12	0.00	0.00		1.95	0.00	5.93	0.01	7.36	1.83	0.83	0.08	0.06	4.26	1.11	0.00	23.40
FY13	0.00	0.00		0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.07	0.19	0.00	0.31
																258.93

Adjust on next slide

	Totals by YR	Funding Profile	Delta	Integrated Delta from profile
FY07	7.81	7.97	0.16	0.16
FY08	34.08	36.05	1.97	2.13
FY09	77.95	65.00	-12.95	-10.83
FY10	53.59	73.22	19.63	8.80
FY11	61.78	46.00	-15.78	-6.98
FY12	23.40	31.76	8.36	1.39
FY13	0.31	0.00	-0.31	1.07
	258.93	260.00	1.07	



# Aug 29 Schedule with new profile

	R&D-Detec	R&D-ANU	ANU-Op	2.0 ANU	2.1 Site & Bl	2.2 Scintillator	2.3 Fiber	2.4 PVC	2.5 Module	2.6 Electro	2.7 Data A	2.8 Near A	2.9 Far Ass	2.10 Mana	Coop Agree	Totals by YR
FY07	5.5	1.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.63
FY08	4.6	4.6	0.2	6.1	1.0	0.5	0.7	0.1	0.1	0.0	0.0	0.0	0.0	0.9	15.5	34.26
FY09	0.1	3.7	0.2	10.6	1.0	2.5	4.1	2.1	5.2	2.8	3.7	0.2	4.4	0.9	32.0	73.62
FY10	0.0	0.2	0.1	11.7	0.5	6.9	4.2	7.5	2.1	10.1	0.8	0.2	3.1	0.9	6.9	55.13
FY11	0.0	0.4	1.0	10.4	0.0	9.3	3.5	16.5	3.4	3.4	0.1	7.5	7.3	0.9	0.0	63.65
FY12	0.0	0.0		2.0	0.0	5.9	0.0	7.4	1.8	0.9	0.1	0.1	4.3	0.9	0.0	23.29
FY13	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.26
																257.84

	Totals by YR	Funding Profile	Delta	Integrated Delta from profile
FY07	7.63	7.97	0.34	0.34
FY08	34.26	36.05	1.79	2.13
FY09	73.62	65.00	-8.62	-6.49
FY10	55.13	73.22	18.09	11.60
FY11	63.65	46.00	-17.65	-6.05
FY12	23.29	31.76	8.47	2.42
FY13	0.26	0.00	-0.26	2.16
	257.84	260.00	2.16	



Progress,  
But more iterations needed



# Proposed Management Contingency

## 2.5 Management Contingency

Contingency for management is treated differently than labor contingency for several reasons. The management positions for NOvA have all been filled and we do not anticipate creating additional positions above L3. If new positions at L3 or above were required, it would not amount to more than a few. Scientists who work at zero cost to the Project staff most of the management positions on NOvA. Scientists would likely fill any new positions at no additional cost.

The NOvA cost and schedule does identify assistant managers to cover multiple shift work at the module factory and for assembly at Ash River. These positions are included with the assembly work where standard labor contingency rules apply.

Non-scientific managers who are not working full time on NOvA may have to devote a larger fraction of their effort to the Project if unanticipated circumstances arise. In these cases, some contingency is required to cover that additional cost to the project.

Contingency is also required to cover the risk that a part-time manager is required to spend a larger fraction of time on a task other than NOvA, a risk that is larger if the NOvA fraction is small. Managers who are eligible for overtime should have a contingency that covers potential overtime. If a manager who is a salaried employee is spending 100% of their time on NOvA, then no contingency is required.

[Next slide](#)



# Proposed Management Contingency

---

NOvA has adopted the following contingency rules for management personnel that reflect these issues.

- 1) 0% for scientific personnel and salaried employees who spend 100% of their effort on NOvA.
- 2) 10% for management personnel who contribute more than 75% of their effort to NOvA.
- 3) 15% for managers who contribute between 50 – 75% of their effort to NOvA.
- 4) 25% for managers who contribute less than 50% of their effort to NOvA.