

FINANCIAL FORECASTING SCIENCE OR SORCERY



Forecasting 101

- **Purpose:**

1. Provide Executive Staff with an initial estimate of projected revenues and expenditures for scheduled and ongoing projects by appropriation line for the establishment of yearly budgets. Initial estimate is required in August of preceding fiscal year (i.e. forecasted period is 10-22 months out).
2. Provide monthly updates to Executive Staff that show the net impact of cost and funding adjustments, project progress, schedule revisions and the addition of projects, to determine if adjustments to programs and projects are needed to keep within budgetary spending limits and ensure we have enough cash to operate.



➤ **THE STATE ROAD FUND IS THE PRIMARY FUNDING SOURCE FOR WVDOH. FOR BUDGETARY PURPOSES, EXPENDITURES ARE DIVIDED INTO 14 SEPARATE CATEGORIES. THE MAINTENANCE LINE (237) IS SUBDIVIDED INTO 3 COMPONENTS FOR TRACKING, BUT IS ACCOUNTED FOR IN AGGREGATE.**

➤ **FORECASTING RESPONSIBILITIES ARE SPLIT BETWEEN THE PROGRAM PLANNING & ADMINISTRATION DIVISION AND THE BUDGET DIVISION.**

➤ **BUDGET DIVISION IS RESPONSIBLE FOR RELAYING REVENUE ESTIMATES RECEIVED FROM WVDMV AND TAX DEPARTMENT. PROGRAM PLANNING PROVIDES ESTIMATES OF FEDERAL-AID REIMBURSEMENT**

➤ **PROGRAM PLANNING FORECASTS EXPENDITURES FOR ALL PROJECT BASED ACCOUNTS (i.e. INTERSTATE, ADHS, OFA, MAINTENANCE RENOVATION, CONTRACT PAVING, NON-FED BRIDGE, NON-FED CONSTRUCTION AND STIMULUS) BUDGET DIVISION DOES THE OTHERS.**

BUDGET ACCOUNT	PROGRAM
9017-278	INTERSTATE
9017-279	OTHER FEDERAL
9017-280	APPALACHIAN
9017-891	FED. ECONOMIC STIMULUS
	SUB-TOTAL
9017-040	DEBT SERVICE
9017-237	MTCE: (ROUTINE) *
9017-237	MTCE: (PROJECTS) **
9017-237	MTCE: (OVERHEAD) ***
9017-272	CONTRACT PAVING
9017-273	BRIDGE REPAIR
9017-275	INVENTORY REVOLVING
9017-276	EQUIPMENT REVOLVING
9017-277	GENERAL OPERATIONS
9017-281	NON FEDERAL AID
9017-282	LITTER CONTROL FUND
9017-319	CLAIMS



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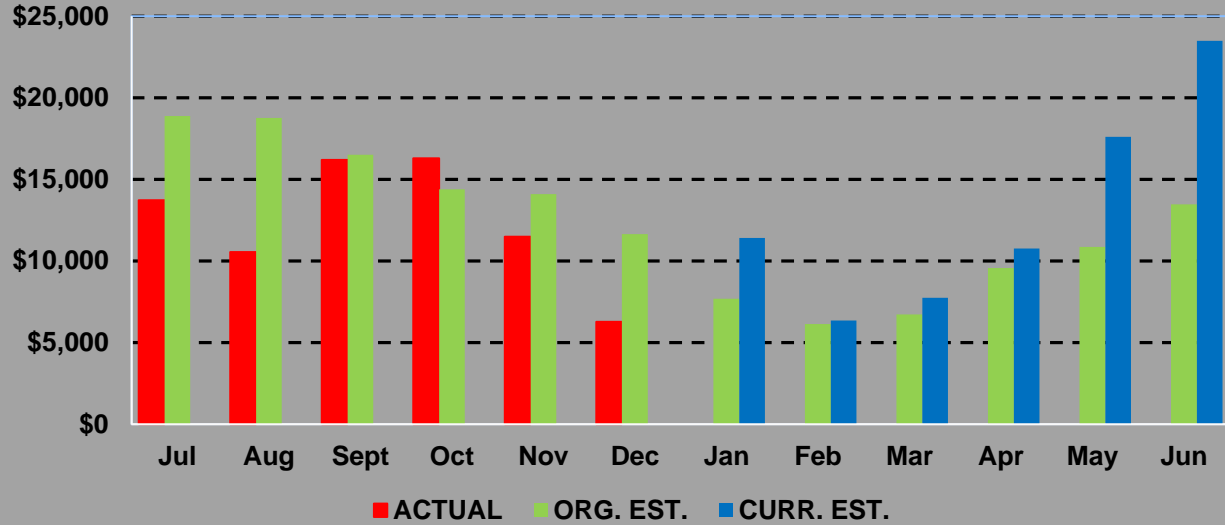
	Budget Line		MAY 2011			JUNE 2011		
			Program Projected Expenditures (1)	Expenditure Probability (%) (2)	Forecast Expenditures (1)*(2)	Program Projected Expenditures (1)	Expenditure Probability (%) (2)	Forecast Expenditures (1)*(2)
Federal-Aid	Interstate FA	ADVER/AUTH	\$16,930	90%	\$15,237	\$20,440	50%	\$10,220
		SCHEDULED	\$152	90%	\$137	\$359	90%	\$323
		TOTAL			\$15,374			\$10,543
	ADHS FA	ADVER/AUTH	\$12,994	100%	\$12,994	\$17,972	100%	\$17,972
		SCHEDULED	\$0	100%	\$0	\$5	100%	\$5
		TOTAL			\$12,994			\$17,977
	Other FA	ADVER/AUTH	\$75,722	70%	\$53,005	\$65,270	37%	\$24,150
		SCHEDULED	\$1,717	35%	\$601	\$2,885	35%	\$1,010
		TOTAL			\$53,606			\$25,160
	Total FA Expenditures				\$81,974			\$53,680
Federal Reimbursement	Interstate FA (90%)				\$13,836			\$9,489
	ADHS FA (80%)				\$10,395			\$14,382
	Other FA (80%)				\$42,885			\$20,128
	Total Fed Reimbursement				\$67,117			\$43,998
Non-Fed	CONTRACT PAVING	ADVER/AUTH	\$8,019	100%	\$8,019	\$10,468	47%	\$4,920
		SCHEDULED	\$60	100%	\$60	\$467	100%	\$467
		TOTAL			\$8,079			\$5,387
	BRIDGE	ADVER/AUTH	\$5,302	85%	\$4,507	\$4,217	65%	\$2,741
		SCHEDULED	\$38	85%	\$32	\$66	50%	\$33
		TOTAL			\$4,539			\$2,774
	RENOVATION Projects + Routine Special	ADVER/AUTH	\$8,454	75%	\$6,341	\$10,284	48%	\$4,936
		SCHEDULED	\$1,959	75%	\$1,469	\$3,463	75%	\$2,597
		TOTAL			\$7,810			\$7,534
	NON-FED CONSTRUCTION	ADVER/AUTH	\$4,731	60%	\$2,839	\$4,955	32%	\$1,586
		SCHEDULED	\$162	35%	\$57	\$304	35%	\$106
TOTAL				\$2,895			\$1,692	
Non-Fed Expenditures			\$28,725		\$23,323	\$34,224		\$17,387

➤ **MONTHLY FORECASTS OF EXPENDITURES ARE GENERATED BY BUDGET LINE BASED UPON THE DATES AND COSTS IN THE PROJECT TRACKING AND ACCOUNTING SYSTEMS. ESTIMATES ARE REVISED DOWNWARD TO REFLECT THAT NOT ALL SCHEDULES WILL BE MET. MONTHLY ESTIMATES ARE AGGREGATED INTO FULL FISCAL YEAR ESTIMATES.**

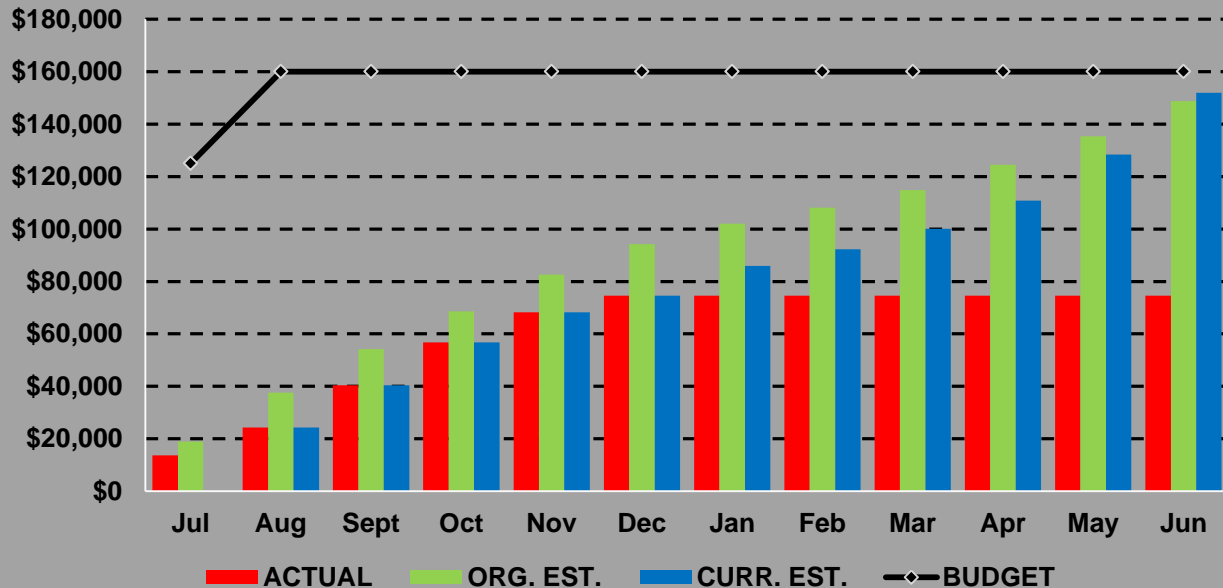
PROGRAM REVIEWED MONTHLY



MONTHLY FY 11 INTERSTATE EXPENDITURES AS OF 12/15/10



CUMULATIVE FY 11 INTERSTATE EXPENDITURES AS OF 12/15/10



INITIAL FY 2011 BUDGET FORECAST 9/30/2009



Data from September 15th expenditure forecast

Budget Line	FY 2011					
	FORECAST EXPENDITURES (ADV/AUTH)	FORECAST EXPENDITURES (SCHEDULED)	ACTUAL YTD EXPENDITURES AS OF 9/30/09	TOTAL PROJECTED EXPENDITURES ACT+FORECAST	CURRENT OR SUPPLEMENTED FY 11 BUDGET	DIFFERENCE BUDGET LESS FY PROJECTED
Interstate FA	\$36,576	\$112,185	\$0	\$148,761	\$125,000	-\$23,761
ADHS FA	\$68,755	\$47,960	\$0	\$116,715	\$115,000	-\$1,715
Other FA	\$187,242	\$170,830	\$0	\$358,072	\$325,000	-\$33,072
FA Expenditures	\$292,573	\$330,975	\$0	\$623,548	\$565,000	-\$58,548
Interstate FA	\$32,918	\$100,967				
ADHS FA	\$55,004	\$38,368				
Other FA	\$153,538	\$140,081				
Total Fed Reimbursement	\$241,461	\$279,415				
CONTRACT PAVING	\$3,091	\$43,296	\$0	\$46,387	\$50,000	\$3,613
BRIDGE	\$14,246	\$30,210	\$0	\$44,456	\$40,000	-\$4,456
RENOVATION Projects + Routine Special	\$16,744	\$38,289	\$0	\$55,033	\$40,000	-\$15,033
NON-FED CONSTRUCTION	\$22,379	\$8,119	\$0	\$30,498	\$25,000	-\$5,498
Total Non-Fed Expenditures	\$56,461	\$119,914	\$0	\$176,374	\$155,000	-\$21,374

Note: Forecast above assumes that some projects will not meet their current schedules and their associated expenditures will be delayed. Adjustments applied as follows: OFA (80% adv/auth, 50% Sch), NF Bridge (100% adv/auth, 50% sch), Renovation (100% adv/auth, 75% sch), NF Const (90% adv/auth, 50% sch). The changes described reduced estimated overall FY 10 expenditures by \$261 million, which would carry to FY 11. Despite the assumptions made, the current program of advertised, authorized and scheduled projects will exceed current budgets by \$130.1 million if expenditures occur as estimated.

- What happened from September 2009 to June 2011



**NOT THE END
OF THE WORLD , BUT....**

- A LOT WAS GOING ON THAT AFFECTS FORECASTING
- 1. Stimulus “shovel ready” Program was being developed
- 2. SAFETEU-LU expired in September 2009
- 3. WVDOH started an AC Bridge Program, which shifted existing projects from NF Bridge to OFA appropriation.
- 4. Administration change, Senate President Earl Ray Tomblin has been acting as Governor from November 2010 to present.
- 5. On Corridor H projects, Davis to Bismarck section 6,7,8 were combined and some scheduled projects were delayed
- 6. June 2010, Legislature moves \$27M to Road Fund to bolster paving
- 7. Management agrees to \$12 M change order on East Beckley Bypass making the project ineligible for federal-aid.
- 8. Management starts \$12 M winter damage program February 2011
- 9. Management cancels A20 surface treatment program and initiates a \$5M Secondary Road Program on April 4, 2011 for spring
- 10. Schedules not met on several large projects: Keyser McCoolle Br, US 52 Red Jacket, Coalfields X-way @ West Helen, etc..
- 11. Oil prices \$60/barrel Sept 09, \$102/barrel in Apr 11 (+70%)

FY 2011 BUDGET ACTUALS 7/2011 WHERE DID WE FINISH UP



Data from June 15th expenditure forecast						
Budget Line	FY 2011					
	FORECAST EXPENDITURES (ADV/AUTH)	FORECAST EXPENDITURES (SCHEDULED)	ACTUAL YTD EXPENDITURES AS OF 6/30/11	TOTAL PROJECTED EXPENDITURES ACT+FORECAST	CURRENT OR SUPPLEMENTED FY 11 BUDGET	DIFFERENCE BUDGET LESS FY PROJECTED
Interstate FA	\$0	\$0	\$144,100	\$144,100	\$160,000	\$15,900
ADHS FA	\$0	\$0	\$81,447	\$81,447	\$115,000	\$33,553
Other FA	\$0	\$0	\$325,000	\$325,000	\$325,000	\$0
Total FA Expenditures	\$0	\$0	\$550,547	\$550,547	\$600,000	\$49,453
Interstate FA	\$0	\$0				
ADHS FA	\$0	\$0				
Other FA	\$0	\$0				
Total Fed Reimbursement	\$0	\$0				
CONTRACT PAVING	\$0	\$0	\$68,515	\$68,515	\$70,000	\$1,485
BRIDGE	\$0	\$0	\$24,861	\$24,861	\$40,000	\$15,139
RENOVATION Projects + Routine Special	\$0	\$0	\$71,017	\$71,017	\$60,295	-\$10,722
NON-FED CONSTRUCTION	\$0	\$0	\$24,009	\$24,009	\$28,000	\$3,991
Non-Fed Expenditures	\$0	\$0	\$188,402	\$188,402	\$198,295	\$9,893

Note: Forecast above assumes that many projects will not meet their current schedules and their associated expenditures will be delayed. Adjustments generally applied are as follows: Interstate (90% adv/auth, 90% Sch), OFA (70% adv/auth, 35% Sch), NF Bridge (100% adv/auth, 50% sch), Renovation (75% adv/auth, 75% sch), NF Const (60% adv/auth, 35% sch); however, in order to mitigate the impact of numerous projects with FY end dates and unexpended balances lower expenditure rates were applied to several categories in June which are as follows: INT (50% adv/auth), OFA (37% adv/auth), Contract Paving (47% adv/auth), NF Bridge (65% adv/auth), Renovation (48% adv/auth) and NF Const (32% adv/auth). Since it is the end of the FY, the changes described had no impact on estimated FY 11 expenditures. The current budget exceeded individual budget lines by approximately \$40 million (\$29M OFA and \$11M in Renovation). Normally the over runs would have carried to FY 12; however, OFA over runs were paid out of the Interstate Line and the over run in renovation projects caused by the Secondary Road and winter Damage Programs was mostly offset by under runs in other aspects of the Maintenance Line. As such, these over runs will not significantly impact the FY 12 budget, but will probably draw scrutiny during the annual Audit of the Agency's books. Estimates reflect supplemental change in Interstate from \$125 to \$160 million, Renovation from \$43 to \$60.2 million and Non Fed CN from \$25 to \$28 million.

MONTHLY	JULY			AUGUST			SEPTEMBER			OCTOBER			NOVEMBER			DECEMBER		
	ORIGINAL EST (9/09)	ACTUAL	% DIFF	ORIGINAL EST (9/09)	ACTUAL	% DIFF	ORIGINAL EST (9/09)	ACTUAL	% DIFF	ORIGINAL EST (9/09)	ACTUAL	% DIFF	ORIGINAL EST (9/09)	ACTUAL	% DIFF	ORIGINAL EST (9/09)	ACTUAL	% DIFF
INTERSTATE	\$18,880	\$13,721	-27%	\$18,762	\$10,544	-44%	\$14,391	\$16,195	13%	\$14,391	\$16,302	13%	\$14,093	\$11,485	-19%	\$11,642	\$6,287	-46%
ADHS	\$13,517	\$9,361	-31%	\$15,047	\$9,004	-40%	\$15,733	\$8,162	-48%	\$15,733	\$7,482	-52%	\$13,073	\$9,050	-31%	\$8,277	\$3,162	-62%
OTHER FED	\$50,263	\$33,901	-33%	\$49,394	\$33,518	-32%	\$38,060	\$42,070	11%	\$38,060	\$39,166	3%	\$35,256	\$32,779	-7%	\$31,480	\$13,561	-57%
CONTRACT PAVING	\$3,037	\$11,636	283%	\$3,357	\$7,056	110%	\$6,158	\$9,235	50%	\$5,963	\$7,848	32%	\$5,653	\$8,023	42%	\$4,237	\$5,125	21%
BRIDGE	\$4,832	\$2,237	-54%	\$4,628	\$1,427	-69%	\$4,826	\$2,861	-41%	\$4,846	\$2,603	-46%	\$4,836	\$2,400	-50%	\$3,978	\$1,445	-64%
RENOVATION	\$5,397	\$5,005	-7%	\$5,118	\$5,643	10%	\$5,538	\$4,903	-11%	\$5,711	\$5,842	2%	\$6,232	\$3,734	-40%	\$5,650	\$1,625	-71%
NON-FED CONST	\$3,930	\$3,447	-12%	\$4,070	\$3,280	-19%	\$4,206	\$2,034	-52%	\$3,141	\$2,204	-30%	\$2,359	\$898	-62%	\$2,259	\$4,433	96%
TOTAL	\$99,854	\$79,308	-21%	\$100,374	\$70,472	-30%	\$88,911	\$85,460	-4%	\$87,845	\$81,447	-7%	\$81,502	\$68,369	-16%	\$67,523	\$35,638	-47%
CUMULATIVE																		
INTERSTATE	\$18,880	\$13,721	-27%	\$37,641	\$24,265	-36%	\$54,156	\$40,460	-25%	\$68,547	\$56,762	-17%	\$82,639	\$68,247	-17%	\$94,281	\$74,534	-21%
ADHS	\$13,517	\$9,361	-31%	\$28,564	\$18,365	-36%	\$45,212	\$26,527	-41%	\$60,945	\$34,009	-44%	\$74,018	\$43,059	-42%	\$82,295	\$46,221	-44%
OTHER FED	\$50,263	\$33,901	-33%	\$99,656	\$67,419	-32%	\$145,622	\$109,489	-25%	\$183,682	\$148,655	-19%	\$218,938	\$181,434	-17%	\$250,419	\$194,995	-22%
CONTRACT PAVING	\$3,037	\$11,636	283%	\$6,393	\$18,692	192%	\$12,551	\$27,927	123%	\$18,513	\$35,775	93%	\$24,166	\$43,798	81%	\$28,402	\$48,923	72%
BRIDGE	\$4,832	\$2,237	-54%	\$9,460	\$3,664	-61%	\$14,285	\$6,525	-54%	\$19,131	\$9,128	-52%	\$23,967	\$11,528	-52%	\$27,945	\$12,973	-54%
RENOVATION	\$5,397	\$5,005	-7%	\$10,514	\$10,648	1%	\$16,053	\$15,551	-3%	\$21,764	\$21,393	-2%	\$27,997	\$25,127	-10%	\$33,647	\$26,752	-20%
NON-FED CONST	\$3,930	\$3,447	-12%	\$8,000	\$6,727	-16%	\$12,205	\$8,761	-28%	\$15,347	\$10,965	-29%	\$17,706	\$11,863	-33%	\$19,964	\$16,296	-18%
TOTAL	\$99,854	\$79,308	-21%	\$200,228	\$149,780	-25%	\$300,083	\$235,240	-22%	\$387,929	\$316,687	-18%	\$469,430	\$385,056	-18%	\$536,953	\$420,694	-22%

MONTHLY	JANUARY			FEBRUARY			MARCH			APRIL			MAY			JUNE		
	ORIGINAL EST (9/09)	ACTUAL	% DIFF	ORIGINAL EST (9/09)	ACTUAL	% DIFF	ORIGINAL EST (9/09)	ACTUAL	% DIFF	ORIGINAL EST (9/09)	ACTUAL	% DIFF	ORIGINAL EST (9/09)	ACTUAL	% DIFF	ORIGINAL EST (9/09)	ACTUAL	% DIFF
INTERSTATE	\$7,691	\$4,433	-42%	\$6,145	\$4,148	-32%	\$6,733	\$5,634	-16%	\$9,575	\$6,029	-37%	\$10,858	\$9,938	-8%	\$13,479	\$39,384	192%
ADHS	\$4,724	\$3,279	-31%	\$3,217	\$4,673	45%	\$3,950	\$5,310	34%	\$5,967	\$3,076	-48%	\$6,977	\$4,709	-33%	\$9,584	\$14,179	48%
OTHER FED	\$19,094	\$16,681	-13%	\$15,729	\$23,741	51%	\$14,646	\$25,713	76%	\$17,308	\$18,997	10%	\$17,938	\$34,903	95%	\$22,938	\$9,970	-57%
CONTRACT PAVING	\$3,047	\$1,435	-53%	\$2,115	\$679	-68%	\$1,926	\$61	-97%	\$2,819	\$2,528	-10%	\$3,470	\$6,136	77%	\$4,610	\$8,753	90%
BRIDGE	\$2,838	\$1,047	-63%	\$2,284	\$1,206	-47%	\$2,262	\$2,378	5%	\$2,744	\$2,617	-5%	\$3,039	\$1,727	-43%	\$3,344	\$2,913	-13%
RENOVATION	\$3,426	\$2,288	-33%	\$2,512	\$1,756	-30%	\$2,570	\$6,925	169%	\$3,427	\$7,343	114%	\$4,163	\$8,653	108%	\$5,289	\$17,300	227%
NON-FED CONST	\$1,493	\$1,902	27%	\$1,469	\$634	-57%	\$1,420	\$1,482	4%	\$2,010	\$1,259	-37%	\$2,020	\$365	-82%	\$2,122	\$2,071	-2%
TOTAL	\$42,312	\$31,065	-27%	\$33,471	\$36,837	10%	\$33,507	\$47,503	42%	\$43,849	\$41,849	-5%	\$48,465	\$66,431	37%	\$61,365	\$94,570	54%
CUMULATIVE																		
INTERSTATE	\$101,972	\$78,967	-23%	\$108,117	\$83,115	-23%	\$114,850	\$88,749	-23%	\$124,424	\$94,778	-24%	\$135,282	\$104,716	-23%	\$148,761	\$144,100	-3%
ADHS	\$87,019	\$49,500	-43%	\$90,236	\$54,173	-40%	\$94,187	\$59,483	-37%	\$100,154	\$62,559	-38%	\$107,131	\$67,268	-37%	\$116,715	\$81,447	-30%
OTHER FED	\$269,512	\$211,676	-21%	\$285,242	\$235,417	-17%	\$299,888	\$261,130	-13%	\$317,196	\$280,127	-12%	\$335,134	\$315,030	-6%	\$358,072	\$325,000	-9%
CONTRACT PAVING	\$31,449	\$50,358	60%	\$33,563	\$51,037	52%	\$35,489	\$51,098	44%	\$38,308	\$53,626	40%	\$41,777	\$59,762	43%	\$46,387	\$68,515	48%
BRIDGE	\$30,783	\$14,020	-54%	\$33,067	\$15,226	-54%	\$35,329	\$17,604	-50%	\$38,073	\$20,221	-47%	\$41,112	\$21,948	-47%	\$44,456	\$24,861	-44%
RENOVATION	\$37,073	\$29,040	-22%	\$39,585	\$30,796	-22%	\$42,155	\$37,721	-11%	\$45,582	\$45,064	-1%	\$49,744	\$53,717	8%	\$55,033	\$71,017	29%
NON-FED CONST	\$21,458	\$18,198	-15%	\$22,926	\$18,832	-18%	\$24,346	\$20,314	-17%	\$26,356	\$21,573	-18%	\$28,376	\$21,938	-23%	\$30,498	\$24,009	-21%
TOTAL	\$579,265	\$451,759	-22%	\$612,736	\$488,596	-20%	\$646,243	\$536,099	-17%	\$690,092	\$577,948	-16%	\$738,557	\$644,379	-13%	\$799,922	\$738,949	-8%

	<i>JUNE</i>		
MONTHLY	ORIGINAL EST (9/09)	ACTUAL	% DIFF
INTERSTATE	\$13,479	\$39,384	192%
ADHS	\$9,584	\$14,179	48%
OTHER FED	\$22,938	\$9,970	-57%
CONTRACT PAVING	\$4,610	\$8,753	90%
BRIDGE	\$3,344	\$2,913	-13%
RENOVATION	\$5,289	\$17,300	227%
NON-FED CONST	\$2,122	\$2,071	-2%
TOTAL	\$61,365	\$94,570	54%
CUMULATIVE			
INTERSTATE	\$148,761	\$144,100	-3%
ADHS	\$116,715	\$81,447	-30%
OTHER FED	\$358,072	\$325,000	-9%
CONTRACT PAVING	\$46,387	\$68,515	48%
BRIDGE	\$44,456	\$24,861	-44%
RENOVATION	\$55,033	\$71,017	29%
NON-FED CONST	\$30,498	\$24,009	-21%
TOTAL	\$799,922	\$738,949	-8%

- Cumulative expenditures were 8% (-\$61 Million) below what was anticipated in 2009 and \$59 Million below the FY 2011 supplemented budget.
- Individual appropriation lines not forecasted accurately with significant over runs and under runs.

- NF BRIDGE = -44% (-\$19 M)
- ADHS = -30% (-\$35M)
- OFA = -9% (-\$33 M)
- NF CONST= -21% (-\$6.5 M)
- CONTRACT PAVING = +48% (\$22 M)
- RENOVATION = +29% (\$16M)

PROJECTS



- As expenditures failed to occur on long term projects management programmed other short term projects (paving, patching and renovation) to fill void

LESSONS LEARNED

- **BETTER SCHEDULES WOULD RESULT IN BETTER FORECASTING, BUT UNTIL MANAGEMENT MAKES IT A PRIORITY AND EMPHASIZES ACCURACY AND ACCOUNTABILITY, IMPROVEMENT IS UNLIKELY.**
- **NEW PROJECTS AND PROGRAMS TAKE TIME TO IMPLEMENT AND RESULT IN DELAYS TO EXISTING PROGRAM.**
- **BIG AND COMPLEX JOBS SUFFER MOST WHEN FORECASTS ARE INACCURATE (BRIDGE REPLACEMENTS & EXPANSION JOBS WILL BE REPLACED WITH RESURFACING AND RENOVATION) .**



LESSONS LEARNED

- **SOME DEGREE OF UNCERTAINTY WILL ALWAYS BE PRESENT. THE KEY IS TO TRY AND MINIMIZE IT.**
- **BETTER FORECASTING WILL HELP MANAGEMENT MAKE BETTER INVESTMENT DECISIONS.**
- **MANAGEMENT NEEDS TO KEEP CASH BALANCES RELATIVELY LOW (\$80 TO \$100 M) TO REINFORCE THE FACT THAT THE WVDOH NEEDS MORE REVENUE TO PRESERVE AND IMPROVE THE SYSTEM.**



LESSONS LEARNED

- **IF I REALLY MESS IT UP AND OUR CASH BALANCE DROPS BELOW \$30 M, YOU WON'T GET PAID !!!**



QUESTIONS ???

