



OHIO DEPARTMENT OF TRANSPORTATION

Office of Statewide Planning and Research

Research Program

State Fiscal Year

2012

Annual Report

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Program Overview

Reflecting on the fiscal year 2012 Research Program, I am proud of all that our team and our colleagues in the community have accomplished. Transportation research has expanded within ODOT due to strong technical liaison interests and efforts, as well as having dedicated researchers. Amid a context of continuing department-wide reorganization, state pension reform for an impending retirement population, pressure to tighten budgets, and the delays of committed transportation projects out to 2036 — creativity and commitment have been key.

Some notable Research Program activities during fiscal 2012 include hosting a peer exchange, partnering with the Ohio Local Technical Assistance Program (LTAP) Center, and reaching out to ODOT Districts. Each of these I will describe in some detail below.

> Peer Exchange:

One requirement of the Statewide Planning and Research Part 2 (SPR2) program is to periodically host a peer exchange (23 USC 420). This offers a great opportunity to learn from other states and programs, both leveraging best practices and building relationships. The guidelines allow us to select the peer exchange topic that will be most helpful to us. Our prior peer exchange in October 2006 focused primarily on the proposal selection process.

We chose to focus our 2011 peer exchange on building a local research program within the state. We surveyed other SPR2 programs and found Iowa and Minnesota to have particularly strong local research programs, so we specifically invited them to participate in our peer exchange. Due to the cooperative nature of the program (state and local), we invited their state DOT employees and county engineers. The three days were full of conversation and exploration, including a focus group of representatives from local Ohio jurisdictions. Feedback was positive from all perspectives: other states, Ohio locals, FHWA division representatives, and the Ohio LTAP program. We have ODOT executive leadership support and are now working to implement the program, ORIL (ODOT's Research Initiative for Locals).

> LTAP Partnership:

The SPR2 program has long matched LTAP funding. Ohio's LTAP has been run within the DOT since late 2002, at which point our Transportation Library cataloged, and has since managed, LTAP's media library. The partnership has given us an excellent opportunity to leverage programs. Some of the collaborations during the fiscal year included the 2011 peer exchange (preparation and participation), project review sessions, final results presentations, and event support (planning for 2012 Research Summit). We are fortunate to have such great partners on our team.

> District Outreach:

Beginning in Spring 2011 and continuing throughout the entire 2012 fiscal year, we spent extra time working with our twelve ODOT Districts. Initially, we had district leaders appoint research liaisons, with whom we visited to share our process and hear their ideas. Of the twenty research project ideas collected for the 2013 fiscal year, ten originated from our districts, most from staff who were new to transportation research but not to transportation. Cooperation with central office has been better than expected and projects are increasingly operational.

We are fortunate and grateful to be growing our program and are ever optimistic about the future of research at ODOT.

Cynthia Gerst

Research Program Manager



Annual Budget

The project budget for the fiscal year includes ODOT research projects, pooled fund projects, and contributions to the National Cooperative Highway Research Program (NCHRP), the Transportation Research Board's (TRB) Information Services (TRIS), TRB's Research in Progress (RIP), and the Ohio Local Technical Assistance Program (LTAP).

Research program administrative costs are not included in this project budget. Most of those costs are part of ODOT's operating budget. This leaves SPR2 funding for project-related investments, and other program-enhancing investments such as the peer exchange.

Budgeted research spending on new projects increased by a healthy 161% due to two core reasons: (1) execution of the new administration's strategic research focus, and (2) the decision to encumber project costs in the initial project year (i.e., front-loading). This allows for easier predictability of new project funds available in future years.

	FY2012	FY2011	Change
New research projects			
Strategic research	\$ 1,865,187	\$ 973,312	92%
Student studies	143,116	63,016	127%
OPREP	987,679	127,514	675%
In-house	43,254	-	-
Total new research	\$ 3,039,236	\$ 1,163,842	161%
Continuing research projects	<u>724,809</u>	<u>1,455,236</u>	(50%)
Total ODOT projects	\$ 3,764,046	\$ 2,619,078	44%
Pooled fund projects			
ODOT-led	\$ -	\$ -	-
Participating	329,500	346,500	(5%)
Total pooled funds	\$ 329,500	\$ 346,500	(5%)
Other research investments			
NCHRP contribution	\$ 1,440,223	\$ 1,392,403	3%
Research correlation services (TRB: TRIS & RIP)	223,540	223,540	0%
LTAP match	141,000	140,000	1%
Total other	\$ 1,804,763	\$ 1,755,943	3%
Total project-related budget	<u>\$ 5,898,309</u>	<u>\$ 4,721,521</u>	25%

Work Program Projections

Before the start of each fiscal year, Research compiles the SP&R2 Annual Work Program Book, which is approved by Executive Leadership and FHWA. The Work Program includes estimations for new ODOT research projects and pooled fund contributions, as seen in the table at right.

These projections can be useful in gauging the margin by which Research deviates from the anticipated expenditures, and thus decrease the level of uncertainty in mid-year program changes.

	FY2012 Actual	FY2012 Estimated	Change
ODOT projects			
Work plan-initiated projects	\$ 2,630,457	\$ 3,520,885	(25%)
Emergency projects	408,779	500,000	(18%)
Continuing research projects	724,809	680,843	6%
Total ODOT projects	<u>\$ 3,764,046</u>	<u>\$ 4,701,728</u>	(20%)
Participating pooled funds			
Proposed pooled funds	\$ 120,000	\$ 95,000	26%
Newly-joined pooled funds	55,000	400,000	(86%)
Continuing pooled funds	154,500	104,500	48%
Total participating	<u>\$ 329,500</u>	<u>\$ 599,500</u>	(45%)

Strategic Research Plan

Following are ODOT's four research focus areas from the Strategic Research Plan for FY2012–2014. These are where the Department is investing most of its research funding and resources. However, in acknowledgement of specialized or urgent needs, research is not limited to these broad-based items.

> Transportation Asset Management:

ODOT's largest asset is our transportation infrastructure, such as roads, bridges, intermodal facilities, railways and ports. Through usage and the passage of time, the system degrades and can become inadequate for both current and projected travel demands. Maintenance of the infrastructure presents many challenges as well as opportunities for improvements. Developing methods to better utilize resources and integrate advances in science, technology, and construction techniques will assist ODOT in efforts to both modernize and support our system.

> Organizational Transformation:

The Greek philosopher Heraclitus once said, "the only constant is change"; this statement resonates today. ODOT is faced with challenging situations brought about through influences such as economics, demographics, management trends, downsizing, shifts in federal funding, increased maintenance needs, and so forth. Research will guide ODOT in creating opportunities to foster inno-

vation, leverage resources, and streamline and enhance decision making and project delivery.

> Transportation Safety:

Ensuring the safety of those utilizing and maintaining our transportation system is a priority for ODOT. The traveling public expects the system to meet their individual needs in a manner that is safe, convenient, economic, and efficient with minimal disruption to their daily routines. In addition, protection for highway crews working on-location is a prominent concern. Identifying, developing and implementing corrective strategies before hazardous events occur is key to advancing a safe and reliable transportation system.

> Customer Connections:

It has been well noted in the business world that effective communication with customers is a critical component to success and longevity. The basis of this sentiment is just as applicable in the public sector as the private sector. As a state agency, ODOT has a wide array of customers and stakeholders. In order for ODOT to fully achieve our mission, it is important for us to be in sync with our customers. Developing methodologies that will foster partnerships and assist ODOT in understanding customers' needs while effectively telling our story and communicating the efficiencies of ODOT is essential.

New Project Initiation

ODOT Research initiates new projects through four innovative programs. The chart below shows how these programs were used to distribute the new project budgets in FY2012 and FY2011.

Strategic Research Projects originate from internally-solicited problem statements, which are then bid on by external researchers in a request for proposal (RFP) process. For FY2012, 16 strategic problem statements were received, 12 of which became RFPs. One project (PS# 2011-09) originated in the prior fiscal year. Two emergency projects (PS# 2012-24 and 2012-26) originated late in the fiscal year, after the Work Program Book was complete. The budget for new Strategic Research carried into future fiscal years, and accounted for 65% of the total new project budget.

Student Studies are small projects that provide quick

solutions to immediate problems and give college students real-world learning opportunities. Their problem statements may originate either internally or externally. For FY2012, 16 student study problem statements were received. Student Studies accounted for 4% of the new project budget.

ODOT's Partnered Research Exploration Program (OPREP) encourages partnerships among researchers and addresses needs identified outside of ODOT. For FY2012, 30 OPREP white papers were received. OPREP projects accounted for 30% of the new project budget.

In-house Research (new to the program in FY2012) allows ODOT staff to fund small studies for which external management is unnecessary. For FY2012, 1 need statement was received. In-house Research accounted for 1% of the new project budget.

Program	FY	Total Budget	Number of Projects	Proposals Received
Strategic Research	2012	\$2,145,066	8	26
	2011	\$1,307,424	7	21
Student Studies	2012	\$143,116	4	5
	2011	\$78,770	4	6
OPREP	2012	\$987,679	5	11
	2011	\$159,393	2	5
In-house	2012	\$43,254	1	1
	2011	\$0	0	N/A



New Projects

ODOT research projects initiated in state fiscal year 2012, sorted by problem statement number

State Job No.	Problem Statement	Project Title	Contractor	Primary Subject Area	Start Date	End Date	Total Budget	FY2012 Budget	
Strategic Research									
134609	2011-09	Probabilistic Use of LiDAR Data to Detect and Characterize Landslides	The Ohio State University	Geotechnical	8/4/11	2/4/13	\$368,346	\$294,677	
134602	2012-04	Uncontrolled Concrete Bridge Parapet Cracking	Cleveland State University	Structures	8/1/11	12/1/12	\$40,000	\$32,000	
134640	2012-05	Rockfall Concrete Barrier Evaluation and Design Criteria	University of Akron	Geotechnical	11/26/11	11/26/13	\$910,459	\$910,459	
134629	2012-06	Snow Removal Wastewater Disposal Alternatives	University of Akron	Maintenance	9/18/11	1/18/13	\$137,599	\$119,272	
134660	2012-09	Bio-Engineering Techniques for Landslide Stabilization - Supplement	The Ohio State University	Geotechnical	4/4/12	4/4/14	\$80,000	\$60,000	
134641	2012-10	Bicycle Trip Forecasting Model: Cincinnati Metropolitan Case Study	University of Cincinnati	Planning	4/1/12	8/1/13	\$40,000	\$40,000	
134651	2012-24	Evaluation of Epoke® Bulk Spreader for Winter Maintenance	University of Akron	Maintenance	12/10/11	12/10/13	\$243,661	\$83,778	
134668	2012-26	PCR Evaluation	Applied Research Associates	Pavement	4/13/12	7/13/13	\$325,002	\$325,002	
8 Projects							\$2,145,066	\$1,865,187	
Student Studies									
134628	2012-13	Development of a Standard Specification for Horizontal Direction Drilling	Bowling Green State University	Construction	10/6/11	2/6/13	\$30,141	\$30,141	
134625	2012-15	Improving Work Zone Safety Through Speed Management	Ohio University	Safety	11/8/11	3/8/13	\$37,077	\$37,077	
134626	2012-16	The Use of Atomic Force Microscopy to Evaluate Warm Mix Asphalt	Ohio University	Materials	9/19/11	1/19/13	\$39,998	\$39,998	
134627	2012-17	Examination of Factors Associated in Motorcycle Crashes in Work Zones	University of Akron	Safety	9/18/11	1/18/13	\$35,900	\$35,900	
4 Projects							\$143,116	\$143,116	
OPREP									
134659	2012-18	Incorporating Chemical Stabilization of the Subgrade in Pavement Design and Construction Practices	Ohio University	Pavement	2/27/12	12/27/13	\$69,001	\$69,001	
134662	2012-19	Traffic Data for Integrated Project-Level PM2.5 Conformity Analysis	University of Cincinnati	Planning	4/21/12	4/21/14	\$319,796	\$319,796	
134639	2012-20	Managing Transportation Assets: Developing of Enabling Decision Support Tools	University of Toledo	Planning	1/15/12	1/15/14	\$150,000	\$150,000	
134624	2012-21	Changing Economy, Demographics, Land Use, Transportation Policies and their Impacts on Travel Behavior	The Ohio State University	Planning	9/19/11	1/19/13	\$135,815	\$135,815	
465970	2012-22	Implementation and Thickness Optimization of Perpetual Pavements in Ohio	Ohio University	Pavement	1/27/12	1/27/14	\$313,067	\$313,067	
5 Projects							\$987,679	\$987,679	
In-House									
495059	2012-30	Thermal Segregation Study - Site 1	Ohio Dept. of Transportation	Materials	5/31/12	12/31/13	\$43,254	\$43,254	
1 Project							\$43,254	\$43,254	
Total New							18 Projects	\$3,319,116	\$3,039,236

Continuing Projects

Active ODOT research projects initiated prior to the start of state fiscal year 2012, sorted by project start date

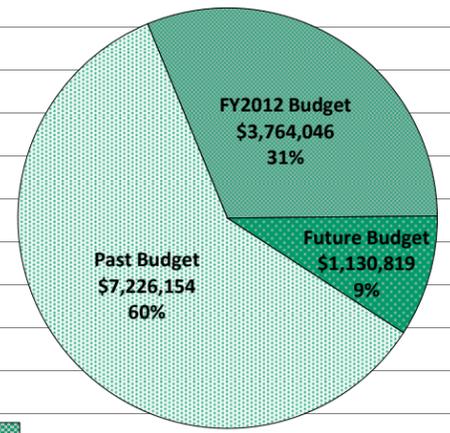
State Job No.	Problem Statement	Project Title	Contractor	Primary Subject Area	Start Date	End Date	Total Budget	FY2012 Budget	
148050	02-15	Instrumentation of the US Grant Bridge for Monitoring of Fabrication, Erection, In-Service Behavior, and to Support Management, Maintenance, and Inspection	University of Cincinnati	Structures	6/1/02	12/31/13	\$903,100	\$0	
134141	04-B	Operation & Maintenance of a Statewide Crest-Stage Stream Gauging Network in Ohio	Ohio Dept. of Natural Resources	Hydraulics	8/7/03	8/7/21	\$1,106,056	\$55,270	
134363	08-01	Benefit Cost Models to Support PMS Decisions	University of Toledo	Pavement	2/1/08	8/31/12	\$380,883	\$33,655	
134384	07-21	Exfiltration Trenches for Post Construction Storm Water Management for Linear Transportation Projects	Ohio University	Environmental	5/1/08	6/30/13	\$585,873	\$159,501	
134381	08-11	Structural Evaluation of LIC-310-0396 Box Beams with Advanced Strand Deterioration	Ohio University	Structures	5/1/08	10/1/11	\$556,429	\$0	
134414	09-04	Rapid Orthophoto Development System	The Ohio State University	Aerial	12/1/08	4/1/13	\$1,492,492	\$0	
134413	09-06	Long Term Validation of an Accelerated Polishing Test Procedure for HMA Pavements	University of Akron	Materials	12/1/09	5/1/13	\$328,750	\$66,147	
134481	10-OPREP1	An Efficient and Accurate Genetic Algorithm for Backcalculation of Flexible Pavement Layer Moduli	University of Akron	Pavement	12/20/09	12/20/12	\$157,382	\$0	
426835	10-10	Veteran's Glass City Skyway Solar Array Field Demonstration	University of Toledo	Structures	3/7/10	6/30/12	\$1,745,352	\$78,603	
134515	10-05	Verification of Rut Depth Collected with the INO Laser Rut Measurement System (LRMS)	Ohio University	Pavement	7/25/10	11/25/11	\$20,000	\$4,000	
134516	10-OPREP2	Validating the Performance of Vehicle Classification Stations	The Ohio State University	Planning	7/29/10	5/29/12	\$84,949	\$16,990	
134517	2011-03	Development of a Flood-Warning System and Flood-Inundation Mapping in Licking County, Ohio	U.S. Geological Survey	Hydraulics	8/1/10	6/30/12	\$236,000	\$84,000	
134556	2011-02	Green Noise Wall Construction and Evaluation	University of Akron	Environmental	11/26/10	8/31/11	\$106,998	\$0	
134557	2011-OPREP	Improved Characterization of Truck Traffic Volumes and Axle Loads for Mechanistic Empirical Pavement Design	University of Akron	Pavement	11/26/10	11/26/12	\$74,444	\$14,889	
134559	2011-11	Development of Opportunity Zones Utilizing Transportation Assets	The Ohio State University	Planning	12/29/10	6/29/12	\$132,934	\$26,587	
134563	2011-04	Nighttime Visibility of 3M All Weather Paint (AWP) and 3M 380WR ES Durable Tape Under Dry, Wet and Rainy Conditions	University of Akron	Traffic	2/4/11	6/4/12	\$20,000	\$4,000	
134564	2011-05	Quantification of Cracks in Concrete Bridge Decks in Ohio District 3	University of Akron	Structures	2/13/11	6/13/12	\$20,000	\$4,000	
134567	2011-08	Application of Bluetooth Technology to Rural Freeway Speed Data Collection	University of Akron	Traffic	3/25/11	11/25/12	\$99,019	\$19,804	
134571	2011-17	Ohio Mobility Improvement Study	RLS & Associates Inc.	Planning	4/18/11	8/18/12	\$228,404	\$45,681	
134573	2011-06	L&D Manual Turn Lane Storage Validation/Update	University of Dayton	Roadway	4/25/11	8/25/12	\$18,770	\$3,754	
134576	2011-10	Determining the Limitations of Warm Mix Asphalt by Water Injection in Mix Design, Quality Control and Placement	University of Akron	Materials	4/25/11	8/25/13	\$250,556	\$57,226	
134577	2011-15	Developing a Methodology for School Travel Plan Development for Large School Districts	TranSystems Corp.	Planning	4/25/11	10/25/12	\$253,513	\$50,704	
Total Continuing							22 Projects	\$8,801,903	\$724,809

Total ODOT 40 Projects \$12,121,019 \$3,764,046

Active Project Investment

Investment distribution over time for ODOT research projects active in state fiscal year 2012, sorted by project duration

Project Title	Duration (months)	Total Project Budget
Operation & Maintenance of a Statewide Crest-Stage Stream Gauging Network in Ohio	216	\$1,106,056
Instrumentation of the US Grant Bridge for Monitoring of Fabrication, Erection, In-Service Behavior, and to Support Management, Maintenance, and Inspection	138	\$903,100
Exfiltration Trenches for Post Construction Storm Water Management for Linear Transportation Projects	61	\$585,873
Benefit Cost Models to Support PMS Decisions	54	\$380,883
Rapid Orthophoto Development System	52	\$1,492,492
Structural Evaluation of LIC-310-0396 Box Beams with Advanced Strand Deterioration	41	\$556,429
Long Term Validation of an Accelerated Polishing Test Procedure for HMA Pavements	41	\$328,750
An Efficient and Accurate Genetic Algorithm for Backcalculation of Flexible Pavement Layer Moduli	36	\$157,382
Determining the Limitations of Warm Mix Asphalt by Water Injection in Mix Design, Quality Control and Placement	28	\$250,556
Veteran's Glass City Skyway Solar Array Field Demonstration	27	\$1,745,352
Rockfall Concrete Barrier Evaluation and Design Criteria	24	\$910,459
Traffic Data for Integrated Project-Level PM2.5 Conformity Analysis	24	\$319,796
Implementation and Thickness Optimization of Perpetual Pavements in Ohio	24	\$313,067
Evaluation of Epoke® Bulk Spreader for Winter Maintenance	24	\$243,661
Managing Transportation Assets: Developing of Enabling Decision Support Tools	24	\$150,000
Bio-Engineering Techniques for Landslide Stabilization - Supplement	24	\$80,000
Improved Characterization of Truck Traffic Volumes and Axle Loads for Mechanistic Empirical Pavement Design	24	\$74,444
Development of a Flood-Warning System and Flood-Inundation Mapping in Licking County, Ohio	22	\$236,000
Validating the Performance of Vehicle Classification Stations	22	\$84,949
Incorporating Chemical Stabilization of the Subgrade in Pavement Design and Construction Practices	22	\$69,001
Application of Bluetooth Technology to Rural Freeway Speed Data Collection	20	\$99,019
Thermal Segregation Study - Site 1	19	\$43,254
Probabilistic Use of LIDAR Data to Detect and Characterize Landslides	18	\$368,346
Developing a Methodology for School Travel Plan Development for Large School Districts	18	\$253,513
Development of Opportunity Zones Utilizing Transportation Assets	18	\$132,934
Ohio Mobility Improvement Study	16	\$228,404
Snow Removal Wastewater Disposal Alternatives	16	\$137,599
Changing Economy, Demographics, Land Use, Transportation Policies and their Impacts on Travel Behavior	16	\$135,815
Uncontrolled Concrete Bridge Parapet Cracking	16	\$40,000
Bicycle Trip Forecasting Model: Cincinnati Metropolitan Case Study	16	\$40,000
The Use of Atomic Force Microscopy to Evaluate Warm Mix Asphalt	16	\$39,998
Improving Work Zone Safety Through Speed Management	16	\$37,077
Examination of Factors Associated in Motorcycle Crashes in Work Zones	16	\$35,900
Development of a Standard Specification for Horizontal Direction Drilling	16	\$30,141
Nighttime Visibility of 3M All Weather Paint (AWP) and 3M 380WR ES Durable Tape Under Dry, Wet and Rainy Conditions	16	\$20,000
Quantification of Cracks in Concrete Bridge Decks in Ohio District 3	16	\$20,000
Verification of Rut Depth Collected with the INO Laser Rut Measurement System (LRMS)	16	\$20,000
L&D Manual Turn Lane Storage Validation/Update	16	\$18,770
PCR Evaluation	15	\$325,002
Green Noise Wall Construction and Evaluation	9	\$106,998



Average: 31 Total: \$12,121,019

Pooled Fund Projects

Transportation Pooled Fund (TPF) research projects active in state fiscal year 2012, sorted by TPF number

TPF #	State Job No.	Problem Statement	Project Title	Contractor	Primary Subject Area	Start Date	End Date	Project Budget	ODOT Budget	ODOT FY2012 Budget
ODOT-Led										
TPF-5 (111)	134254	05-17	Development of Standards for Geotechnical Management Systems	University of Florida	Geotechnical	8/10/05	6/30/12	\$644,639	\$60,000	\$0
TPF-5 (121)	134287	06-13	Monitoring and Modeling of Pavement Response and Performance	Ohio University	Pavement	5/1/06	5/1/12	\$1,584,958	\$785,129	\$0
TPF-5 (188)	134411	09-13	Evaluation of Fiber Reinforced Composite Dowel Bars and Stainless Steel Dowel Bars	Applied Pavement Technology	Pavement	10/17/08	10/17/11	\$54,000	\$21,600	\$0
3 Projects								\$2,283,597	\$866,729	\$0
TPF #	Project Title	Lead Agency	Primary Subject Area	Joined (CY)	Project Budget	ODOT Budget	ODOT FY2012 Budget			
Participating - New										
TPF-5 (243)	Motorcycle Crash Causation Study	FHWA	Safety	2011	\$700,000	\$150,000	\$50,000			
TPF-5 (250)	Executive Workshops on Strategies and Best Practices for State Departments of Transportation to Support Commercialization of Electric Vehicles (EV) and Infrastructure	Washington	Planning	2011	\$145,000	\$15,000	\$0			
TPF-5 (251)	Relative Operational Performance of Geosynthetics Used as Subgrade Stabilization	Montana	Geotechnical	2011	\$633,719	\$100,000	\$50,000			
TPF-5 (255)	Highway Safety Manual Implementation	FHWA	Safety	2011	\$1,085,000	\$80,000	\$20,000			
3 Projects					\$2,563,719	\$345,000	\$120,000			
Participating - Continuing										
SPR-3 (042)	Aurora Program	Iowa	Maintenance	2006	\$3,122,500	\$100,000	\$25,000			
TPF-5 (004)	Long Term Pavement Performance (LTPP) Specific Pavements Study (SPS) Traffic Data Collection	FHWA	Planning	2003	\$14,676,285	\$154,594	\$0			
TPF-5 (063)	Improving the Quality of Pavement Profiler Measurement	FHWA	Pavement	2003	\$1,277,656	\$141,600	\$15,000			
TPF-5 (070)	Second International Conference on Accelerated Pavement Testing	Minnesota	Pavement	2005	\$130,000	\$5,000	\$0			
TPF-5 (099)	Evaluation of Low Cost Safety Improvements	FHWA	Planning	2012	\$2,670,000	\$30,000	\$30,000			
TPF-5 (088)	NDE/NDT for Highways and Bridges	New York	Structures	2004	\$75,000	\$10,000	\$0			
TPF-5 (101)	Evaluation of Applications of Mechanistic Prediction Modeling Tools	New York	Pavement	2005	\$505,000	\$100,000	\$0			
TPF-5 (106)	Guidelines for Designing Bridge Piers and Abutments for Vehicle Collisions	Texas	Structures	2007	\$574,689	\$50,000	\$0			
TPF-5 (108)	Software Tools for Sharing and Integrating GIS Data	Washington	Planning	2005	\$250,000	\$90,000	\$0			
TPF-5 (112)	Midwest States Pooled Fund Pavement Preservation Partnership	Michigan	Pavement	2006	\$220,000	\$15,000	\$0			
TPF-5 (120)	Deer Vehicle Crash Information and Research (DVCIR) Center	FHWA	Safety	2006	\$260,000	\$50,000	\$0			

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TPF #	Project Title	Lead Agency	Primary Subject Area	Joined (CY)	Project Budget	ODOT Budget	ODOT FY2012 Budget
Participating - Continuing							
TPF-5 (127)	Consortium of Accelerated Pavement Testing (CAPT) and Technical Exchange Partnership	Kansas	Pavement	2006	\$225,000	\$25,000	\$0
TPF-5 (129)	Recycled Unbound Pavement Materials	Minnesota	Materials	2007	\$375,000	\$75,000	\$0
TPF-5 (135)	Tire/Pavement Noise Research Consortium	Washington	Environmental	2007	\$150,000	\$40,000	\$10,000
TPF-5 (151)	Subsurface Drainage for Landslide and Slope Stabilization	Washington	Geotechnical	2007	\$310,000	\$50,000	\$0
TPF-5 (153)	Optimal Timing of Preventive Maintenance for Addressing Environmental Aging in HMA Pavements	Minnesota	Pavement	2007	\$375,000	\$75,000	\$0
TPF-5 (156)	Mid America Freight Coalition Program	Wisconsin	Planning	2007	\$850,000	\$150,000	\$25,000
TPF-5 (158)	FHWA Traffic Noise Model: Version 3.0 Software and Training	FHWA	Environmental	2007	\$166,500	\$30,000	\$0
TPF-5 (159)	Technology Transfer Concrete Consortium	Iowa	Materials	2008	\$244,000	\$25,000	\$5,000
TPF-5 (169)	Investigation of Curved Girder Bridges with Integral Abutments	Iowa	Structures	2008	\$325,000	\$37,500	\$7,500
TPF-5 (171)	Evaluation of Non Intrusive Traffic Detection Technologies Phase III	Minnesota	Planning	2007	\$150,000	\$15,000	\$0
TPF-5 (174)	Construction of Crack-Free Bridge Decks, Phase II [Formerly TPF-5(051)]	Kansas	Structures	2008	\$975,000	\$100,000	\$0
TPF-5 (176)	Traffic Analysis and Simulation	FHWA	Roadway	2008	\$435,000	\$200,000	\$0
TPF-5 (182)	SafetyAnalyst Support [Formerly SPR-2(210)]	FHWA	Safety	2009	\$1,053,828	\$50,000	\$0
TPF-5 (192)	Loop and Length Based Classification	Minnesota	Planning	2009	\$365,000	\$75,000	\$0
TPF-5 (193)	Midwest States Crash Testing Program [Formerly SPR-3(017)]	Nebraska	Roadway	2009	\$600,000	\$183,000	\$0
TPF-5 (198)	Urban Mobility Study, 2009 Continuation [Formerly SPR-3(049)]	Texas	Planning	2009	\$310,000	\$100,000	\$25,000
TPF-5 (202)	HY-8 Culvert Analysis Program - Phase Three of Development Efforts	FHWA, HRTM-2	Structures	2009	\$110,000	\$15,000	\$0
TPF-5 (218)	Clear Roads Winter Highway Operations [Formerly TPF-5(092)]	Minnesota	Maintenance	2010	\$525,000	\$100,000	\$25,000
TPF-5 (220)	Accommodating Oversize/Overweight Vehicles at Roundabouts	Kansas	Safety	2010	\$195,000	\$30,000	\$0
TPF-5 (233)	Technology Transfer Intelligent Compaction Consortium (TTICC)	Iowa	Construction	2011	\$345,000	\$35,000	\$7,000
TPF-5 (237)	Transportation Library Connectivity	Missouri	Materials	2011	\$802,528	\$80,000	\$15,000
TPF-5 (239)	No Boundaries Roadway Maintenance Practices	Missouri	Maintenance	2012	\$292,000	\$30,000	\$10,000
TPF-5 (245)	2012 Multi-State Asset Management Implementation Workshop	California	Planning	2012	\$120,000	\$10,000	\$10,000
35 Projects					\$33,059,986	\$2,276,694	\$209,500

Total Pooled Fund **\$37,907,302** **\$3,488,423** **\$329,500**



Allocations by Subject Area

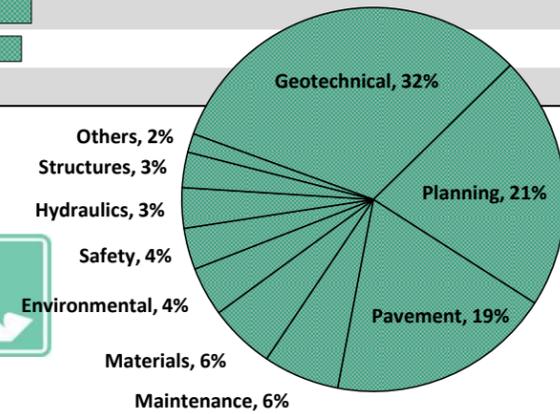
In state fiscal year 2012, ODOT research projects and all pooled fund studies (81 total) covered 13 subject areas. While some projects apply to multiple subject areas, only the projects' primary subject areas are represented in these charts which show the budget distribution.

Several subject area budgets increased by a significant percentage (Geotechnical, Pavement, Maintenance, Safety and Construction) in 2012. Due to a recent focus on ODOT district research, we anticipate similar increases in both Maintenance and Safety areas in the next several years.

	FY2012	FY2011	Change
ODOT projects and pooled funds			
Geotechnical	\$ 1,315,136	\$ 10,000	13051%
Planning	875,572	894,823	(2%)
Pavement	774,613	223,856	246%
Maintenance	263,050	25,000	952%
Materials	226,625	239,890	(6%)
Environmental	169,501	575,771	(71%)
Safety	142,977	25,000	472%
Hydraulics	139,270	204,141	(32%)
Structures	122,103	517,254	(76%)
Construction	37,141	7,000	431%
Traffic	23,804	110,827	(79%)
Roadway	3,754	132,016	(97%)
Aerial	-	-	-
Total ODOT projects and pooled funds	\$ 4,093,546	\$ 2,965,578	38%



Subject	FY2012 Budget	Number of Projects
Aerial	\$0	1
Construction	\$37,141	2
Environmental	\$169,501	4
Geotechnical	\$1,315,136	6
Hydraulics	\$139,270	2
Maintenance	\$263,050	5
Materials	\$226,625	7
Pavement	\$774,613	15
Planning	\$875,572	17
Roadway	\$3,754	3
Safety	\$142,977	7
Structures	\$122,103	10
Traffic	\$23,804	2
Total	\$4,093,546	81

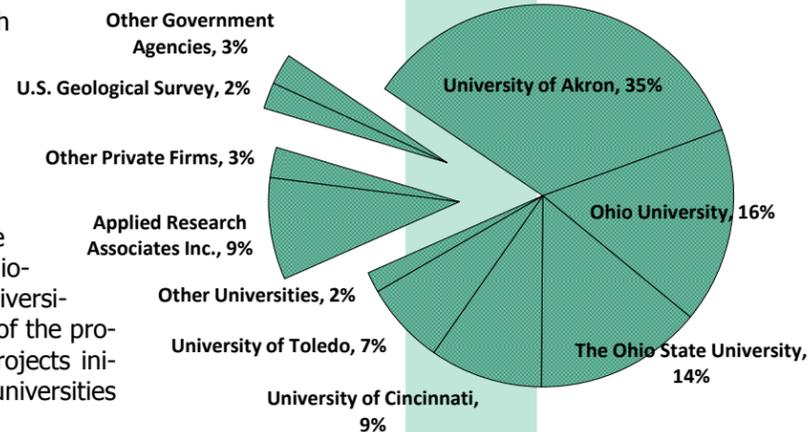


Allocations by Contractor

In state fiscal year 2012, the 43 active ODOT research projects and ODOT-led pooled fund studies contracted with 16 research institutions. Of those institutions, 14 were budgeted funds in FY2012. The charts here show the budget distribution among the various research institutions.

Research projects with ODOT are open to all participants without prequalification, (except for In-house projects, and for externally-solicited Student Studies which are only accepted from Ohio-based colleges and universities). In FY2012, most of the proposals received, and projects initiated, are with public universities within Ohio.

	FY2012	FY2011	Change
ODOT projects and ODOT-led pooled funds			
Universities	\$ 3,160,136	\$ 1,769,421	79%
Private firms	421,386	645,517	(35%)
Government Agencies	182,524	204,141	(11%)
Total ODOT projects and ODOT-led pooled funds	\$ 3,764,046	\$ 2,619,079	44%



Contractor	FY2012 Budget	Number of Projects
University of Akron	\$1,315,474	12
Bowling Green State University	\$30,141	1
University of Cincinnati	\$359,796	3
Cleveland State University	\$32,000	1
University of Dayton	\$3,754	1
University of Florida	\$0	1
The Ohio State University	\$534,069	6
Ohio University	\$622,644	8
University of Toledo	\$262,258	3
Universities	\$3,160,136 84%	36 84%
Applied Pavement Technology	\$0	1
Applied Research Associates Inc.	\$325,002	1
RLS & Associates Inc.	\$45,681	1
TranSystems Corp.	\$50,704	1
Private Firms	\$421,386 11%	4 9%
Ohio Dept. of Natural Resources	\$55,270	1
Ohio Dept. of Transportation	\$43,254	1
U.S. Geological Survey	\$84,000	1
Government Agencies	\$182,524 5%	3 7%
Total	\$3,764,046	43

Final Reports

All final reports published since 2000 are available on our website. Prior reports can be requested by contacting the ODOT Library at 614-466-7680. On the web version of this document, click on the report number for a link to the report.

Report Number	Report Title	Contractor(s)	Subject Area(s)
FHWA/OH-2011/15	Investigate Feasibility of Using Ground Penetrating Radar In QC/QA of Rubblization Projects	INFRAME	Pavement
FHWA/OH-2011/16	Structural Evaluation of LIC-310-0396 and FAY-35-17-6.82 Box Beams with Advanced Strand Deterioration	Ohio University, University of Cincinnati, University of Toledo	Structures
FHWA/OH-2011/17	Green Noise Wall Construction and Evaluation	University of Akron	Environmental
FHWA/OH-2011/18	Verification of Rut Depth Collected with the INO Laser Rut Measurement System (LRMS)	Ohio University	Pavement
FHWA/OH-2011/19	Evaluation of Alternative Dowel Bar Materials and Coatings	Applied Pavement Technology	Pavement
FHWA/OH-2012/1	GPS-Based Household Interview Survey for the Cincinnati Ohio Region	Abt SRBI	Planning, Traffic
FHWA/OH-2012/2	Instrumentation of the Maumee River Crossing	University of Cincinnati, University of Toledo	Structures
FHWA/OH-2012/3	Quantification of Cracks in Concrete Bridge Decks in Ohio District 3	University of Akron	Structures
FHWA/OH-2012/4	Development of a Flood-Warning System and flood-Inundation Mapping in Licking County, Ohio	U.S. Geological Survey	Hydraulics
FHWA/OH-2012/5	A Comparison of Optical Gradation Devices to Current Test Methods	INFRAME	Materials
FHWA/OH-2012/6	Nighttime Visibility of 3M AWP and 3M 380WR ES Durable Tape under Dry, Wet, and Rainy Conditions	University of Akron	Materials, Traffic
FHWA/OH-2012/7	Validating the Performance of Vehicle Classification Stations	The Ohio State University	Planning
FHWA/OH-2012/8	Monitoring and Modeling of Pavement Response and Performance, Task B: New York	Ohio University	Pavement
FHWA/OH-2012/10	Benefit Cost Models to Support Pavement Management Decisions	University of Toledo	Pavement
FHWA/OH-2012/11	Development of Opportunity Zones Utilizing Transportation Assets	The Ohio State University	Planning

Office of Statewide Planning & Research
Research Section

1980 West Broad Street, 2nd Floor
Columbus, Ohio 43223

Phone: 614.644.8135
Fax: 614.995.7047

research@dot.state.oh.us

<http://www.dot.state.oh.us/research>



Jerry Wray, ODOT Director



John Kasich, Governor

Research Staff

Cynthia Gerst

Program Manager
614.466.1975

cynthia.gerst@dot.state.oh.us

Vicky Fout

Implementation & T2
614.387.2710

vicky.fout@dot.state.oh.us

Zona Kahkonen Keppler

Library Administrator
614.466.2882

zona.kahkonenkeppler@dot.state.oh.us

Jill Martindale

Funding & District Research
614.644.8173

jill.martindale@dot.state.oh.us

Ruth Monks

Library Assistant
614.466.7680

ruth.monks@dot.state.oh.us

Kelly Nye

Contracts
614.644.8135

kelly.nye@dot.state.oh.us

Adam Woodyard

Intern
614.387.1267

adam.woodyard@dot.state.oh.us

