

APPENDIX

SUMMARY OF MoDOT RESULTS

Year(s)	Innovation/Efficiency	2022 Additional Funding	2022 Customer Savings	2022 Lives Saved	2022 MoDOT Savings	Cost Benefit Details	Item Type	Path
2007-2022	Paving With Recycled Materials				\$ 30,164,597.00	As asphalt costs rose in other states, MoDOT's emphasis on asphalt pavement recycling and use of used roofing shingles in pavement mix helped contractors keep the average bid price per ton of asphalt steady in Missouri. The use of recycled asphalt can reduce material costs by \$5-10 per ton. This effort began in 2004 and savings are ongoing.	Item	sites/cr/Lists/SummaryofSavings
2007-2022	Alternating Passing Opportunities with Shared 4-Lane Design		\$ 26,932,512.00			A shared 4-lane can be thought of as a 2-lane road featuring a passing lane that alternates every mile or so between opposing traffic. This provides safe opportunities for drivers in both directions to pass slower vehicles. Four Missouri highways use the 4-lane approach, totaling 117 centerline miles. Savings shown here reflect the difference in cost between building traditional 4-lane highways and the shared 4-lane approach. Traveler savings in time and fuel costs are not shown, but are thought to be significant.	Item	sites/cr/Lists/SummaryofSavings
2012-2022	Achieving the Improbable With Design-Build Approach			27		In the early 2000s, Missouri's legislators authorized MoDOT to use a design-build approach on three projects to demonstrate whether the public sector success of this innovative bid-build approach could be replicated in public works. Since then, MoDOT has delivered 15 Design-Build Projects that were completed 107.5 months ahead of schedule. MoDOT continues to partner with the public and private sectors to deliver projects that maximize available resources into collaborative solutions that achieve goals. This collaborative effort challenges the way projects are delivered. MoDOT pushes the boundaries to execute projects of different size and complexity using innovative data driven processes and a wide range of public and private partnerships. Concentrating on project goals, innovation, schedule and budget, construction is completed more efficiently, with less impact on travelers.	Item	sites/cr/Lists/SummaryofSavings
2007-2022	Engineering Reviews Enhance Value				\$ 17,850,766.71	Before design and construction projects can be called complete, consultants or sharp-eyed co-workers review methods and procedures. The ideas they offer often improve project practicality and the bottom line.	Item	sites/cr/Lists/SummaryofSavings

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2011-2022	Building Slim Shoulders Where None Existed	\$ 82,818,022.00	8	<p>MoDOT has installed thousands of miles of shoulders and rumble strips on rural highways where there were none. Using a 2-foot standard rather than the 4-foot shoulder required for major roads made this possible. The result - a 30 percent reduction in run-off-road severe crashes. Engineered shoulders helped drivers regain control. The paving cost of a 2-foot versus a 4-foot shoulder saves \$106,000 per mile and reduces the cost to obtain sufficient right-of-way.</p>	Item	sites/cr/Lists/SummaryofSavings
2007-2022	At-Grade Crossing Conversion to J-Turn	\$ 61,334,783.00	6	<p>J-Turns, a cost-effective alternative to an overpass, reduce the number and severity of crashes at at-grade highway intersections. Traditional interchanges cost \$5-10 million to build. J-Turns average cost is \$800,000. At locations where J-Turns were installed, crashes are down 25 percent and those incidents result in 88 percent fewer fatalities. This design innovation allows us to address a minimum of six severe crash sites with the same money it would take to build a single traditional overpass. MoDOT's first J-Turn was built in 2007.</p>	Item	sites/cr/Lists/SummaryofSavings
2007-2022	Increased Federal Share for Project Level Innovation	\$ 21,977,815.07		<p>FHWA's Every Day Counts initiative is designed to identify and deploy innovation aimed at shortening project delivery, enhancing the safety of our roadways, and protecting the environment. The increased Federal share for innovative techniques incentivizes by providing MoDOT an additional 5% Federal Share for projects that implement innovation to help deliver projects more efficiently and to deploy rapidly proven solutions that make a difference.</p>	Item	sites/cr/Lists/SummaryofSavings
2009-2022	Converting Roadside Assets to Truck Parking	\$ 691,232.00		<p>Though other states have shuttered rest areas in an attempt to save money, Missouri converted obsolete and expensive-to-maintain rest areas and weigh stations to basic truck parking areas. The costs of decommissioning these sites is quickly recouped. When converted, there is no need for building cleaning services, site maintenance or water. Electricity costs are slashed. Motor carriers praise Missouri. The conversions increased the number of publicly provided truck parking spaces in the state, making it easier to find a safe place to sleep. Rested drivers are safer drivers.</p>	Item	sites/cr/Lists/SummaryofSavings

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2012-2022	Streamlining Survey Costs with Light Detection and Ranging (LiDAR) Technology	\$	3,103,416.00	LiDAR instruments measure distance to a target by illuminating it with a laser light. Adopting this technology reduced the cost of survey design. An ACEC Engineering Excellence Grand Award winner two consecutive years.	Item	sites/cr/Lists/SummaryofSavings
2013-2022	Paperless Contract Storage	\$	63,000.00	By using electronic storage, MoDOT reduces its long term document storage costs. Contracts and bonds prepared for road and bridge work average well over 100 pages each. Creating, modifying and delivering them electronically for approval cuts processing time from 30 days to 3 days. MoDOT's other agreements, such as reciprocal agreements and memorandums of understanding are stored and often produced paperlessly. This expedites the research, review and handling of such documents, saving staff time and other costs.	Item	sites/cr/Lists/SummaryofSavings
2019-2022	Converting Roadway Lighting to LED	\$	302,229.92	Replacing high pressure sodium highway lights with LED lighting results in remarkable energy savings. Also, because LEDs last longer, they are changed less often, resulting in lower labor costs.	Item	sites/cr/Lists/SummaryofSavings
2009-2022	Realty to Roads Property Sales Program	\$	1,786,798.00	MoDOT sells state-owned property no longer needed for the operation of the state's system. The proceeds from this program is reinvested into the road fund.	Item	sites/cr/Lists/SummaryofSavings
2013-2022	Realizing Revenue Through Recycling	\$	90,975.00	Recycling paper, plastic, ink cartridges and more is second nature for MoDOT office employees. Field staff routinely collect scrap metal, tires, anti-freeze and the like. All of the items are sold with the revenue invested in Missouri's highway system.	Item	sites/cr/Lists/SummaryofSavings
2007-2022	Cost Share and Cost Participation Programs	\$	163,675,000.00	Communities contribute to state highway projects to receive needed upgrades faster. Revenues from local tax initiatives often provide the local portion in Cost Share Program projects.	Item	sites/cr/Lists/SummaryofSavings
2019-2022	Revenue Generated from Leasing Property	\$	635,039.00	MoDOT leases Commission owned property when it does not interfere with the operation of the system and benefits the public. Areas leased are utilized for agriculture purposes, parking facilities, highway patrol regional sites to list a few. The additional revenue is reinvested in Missouri's highways. Beginning in 2019-2022 lease generated revenue returned \$2.4M back into the highway fund.	Item	sites/cr/Lists/SummaryofSavings

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2007-2022	Web-Based Motor Carrier Credentialing	\$	8,700,467.00		MoDOT Carrier Express, an online business portal, allows trucking companies to conduct business with MoDOT anytime and drastically reduces the need to speak with an agent. Customers transact more than 125,000 actions each year on their own and receive most required credentials electronically rather than by mail or shipment. Since 2007, Missouri motor carriers realized significant time savings through electronic credential delivery. Trucks get on the road - making money - faster.	Item	sites/cr/Lists/SummaryofSavings
2007-2022	Electronic Truck Pre-Screening at Weigh Stations	\$	8,617,139.00		Electronic pre-screening using weigh-in-motion scales and other technology helps identify the good players among commercial truck traffic in Missouri. Transponder-equipped trucks found in good standing are allowed to bypass weigh stations so Missouri State Highway Patrol Commercial Vehicle officers' inspection efforts are more efficient. Motor carriers who participate in voluntary service save time, fuel and money while Missouri uses the same resources to process an increasing number of trucks.	Item	sites/cr/Lists/SummaryofSavings
2007-2022	Making Highways Smoother and Safer, Sooner	\$	118,678,838.00	10	The Smooth Roads Initiative and Better Roads, Brighter Future program were back-to-back efforts that improved 5,600 miles of highways. Completed earlier than scheduled, the efforts delivered smoother pavement, brighter striping, rumble stripes and other safety improvements to the highways that carry 80 percent of Missouri's traffic. These improvements have resulted in over \$1 billion of safety benefits to the customers since 2007.	Item	sites/cr/Lists/SummaryofSavings
2007-2022	Reducing Crossover Crashes with Median Guard Cable	\$	379,633,625.00	37	Missouri's median guard cable is successful in slowing and guiding wayward vehicles from crossing into opposing lanes. Guard cable is used on portions of all Missouri interstates and other major routes. It drastically reduces the number of median crossover crashes which can be devastating, often fatal.	Item	sites/cr/Lists/SummaryofSavings