

Application Information

Application No: 19-001336

Application Type:	General	Agency (City or County):	Solano County District Attorney's Office	Department (Police Dept, DA Office, etc):	
Authorized Representative:	Krishna A. Abrams	DUNS Number:	043278352	DUNS Expiration Date:	3/22/2018
DUNS Registered Address:	675 Texas St., Suite 6500	DUNS City:	Fairfield	DUNS ZIP+4:	94533-6372

Application Summary

Grants Made Easy Application Titles and Descriptions are pre-populated. For General Grants, provide the Application Title and Application Description.

Application Title:

Acquisition of LC-MS/MS Technology for Enhancement of DUID Testing

Application Description:

The Solano County District Attorney's Office, Bureau of Forensic Services (BFS) is requesting funding for the acquisition of a Liquid Chromatograph with Tandem Mass Spectrometry (LC-MS/MS) instrument. The instrument would provide the BFS with the capabilities of full-spectrum toxicological analysis and quantitation of Tier 1 drugs from blood samples taken from drivers suspected of Driving Under the Influence of Drugs (DUID). The scope of this application also requests funding (overtime and training funds) for the requisite time and training of staff as well as instrument and method development and validation. Contractual services are also requested for instrument data integration with the current Laboratory Information Management System.

Focus of Application: Drug-Impaired Driving

Problem Statement:

Of the fifty-eight counties that comprise the State of California, Solano County has the 11th highest rate of fatal traffic crashes and the 8th highest rate of fatal crashes involving alcohol (OTS 2013, latest statistics). It stands that Solano County would rank similarly in fatal crashes involving drug impairment. Solano County ranks 20th in population size out of the 58 California counties. With Interstate 80 connecting the Sacramento Region with the San Francisco Bay Area Region and running through the three major cities in Solano County, there is a high likelihood of a larger proportion of impaired drivers driving through the county.

With the increased use of medical marijuana and the recent passage of Proposition 64 in California, legalizing the use of recreational marijuana, there is an expected increase in the number of drivers impaired with marijuana. According to data from the state of Washington, there is the potential of greater than one-third of all drivers stopped for impairment, testing positive for marijuana and/or its metabolites. This data has shown an increase in the percentage of total driving cases confirmed positive for THC rising from 18% in 2009 to 33% in 2015[i]. The BFS is currently limited in its scope and ability to test for drugs from driving impairment cases. The lab currently utilizes an ELISA system to screen for classes of illicit drugs and Gas Chromatography/Mass Spectrometry (GCMS) instrumentation for the confirmation and quantitation of drugs. And while the scope of drugs tested for is limited, the levels of sensitivity for the quantity of drugs within blood is also limited due to the current technology. The technology advancement of Liquid Chromatography with Tandem Mass Spectrometry (LC-MS/MS) has become the preferred method for testing of toxicology samples due to increased sensitivity, efficiency and ease of sample preparation. With LC-MS/MS, the BFS would have the ability to confirm marijuana (THC and metabolites) on DUID samples as well as increase the types of drugs tested to include all Tier 1[iii] substances as well as increase sensitivity to eventually meet the NHTSA recommended testing sensitivity levels. In addition to the added compounds for testing, the volume of sample required would be significantly less, utilizing LC-MS/MS for most compounds.

The BFS currently *screens* blood samples for the following classes of drugs &/or their metabolites:

- Cocaine
- Amphetamines
- Marijuana
- Opiates
- Benzodiazepines

Of these drug classes screened for, the BFS is currently limited to confirming and quantitating the following drugs &/or their metabolites:

- Cocaine & one metabolite
- Amphetamine, Methamphetamine, MDA & MDMA
- Codeine, Morphine, & 6-MAM

Additional drugs (benzodiazepines, other limited opiates, and some basic pH prescription drugs) can be identified, but are not capable of quantitation with current methods.

Because of the challenges in testing for THC and its metabolites by GCMS, those compounds have not yet been validated by the BFS for confirmation and quantitation. While the BFS currently has plans to validate THC methods by GCMS, the technology will limit the number of samples that can be tested as well as the sensitivity for detecting compounds from samples. The chemistry of THC analysis by GCMS requires significant instrument downtime that is not a condition for LC-MS/MS; leading to more efficiency. Additionally, certain THC metabolites are not conducive for testing with GCMS.

The BFS is also unable to forward DUID cases to the California Department of Justice, Bureau of Forensic Services Toxicology Laboratory (DOJ BFS) due to policy. The DOJ BFS will not accept cases from local government laboratories where the local laboratory performs any level of testing in a particular forensic discipline. While the BFS only conducts limited toxicology testing, the DOJ BFS will not accept any samples for work above and beyond what the BFS can test for.

With current BFS laboratory capabilities and the DOJ BFS unavailability, the laboratory is reliant on outsourcing many of the drug confirmations to a private laboratory. This is currently resulting in a yearly expenditure of approximately \$50,000 for testing; with additional expenses that result from the need for expert testimony. With the laws legalizing recreational marijuana use, it is expected that the demand for marijuana confirmation in DUID cases will increase significantly. Those are cases that are currently outsourced and require additional expense to the laboratory and the resulting prosecution.

[i] Data provided by Fiona Couper, Washington State Toxicologist

[ii] 2013 Journal of Analytical Toxicology

Traffic Data Summary:

City Applicants: Complete the table below using local data, do not use the OTS Rankings or SWITRS.

County or State Applicants: Complete the table below using SWITRS data.

Collision Type	2012		2013		2014	
	Collisions	Victims	Collisions	Victims	Collisions	Victims
Fatal	17	20	36	38	45	49
Injury	1552	2215	1615	2374	1721	2501

Proposed Solution

Strategies:

Over the course of the three-year period of 2014 – 2016 the BFS has averaged 1298 requests per year for testing related to driver impairment. This includes:

- 1043 average yearly requests for blood alcohol testing.
- 255 average yearly requests for testing of blood for drugs.

Current laboratory practice is to test all blood samples submitted for alcohol testing, that result in less than .08% alcohol, to be tested for drugs. Any blood samples submitted that are over .08% are not currently tested for drugs unless by special request.

Between 2014 – 2016 the BFS has averaged 258 blood samples per year in which alcohol testing resulted in a BAC of .08% - .15%. The BFS also saw a significant increase of 23% in blood alcohol requests in 2016 over 2015.

By increasing the number of blood samples advancing for drug testing to those that result in up to a .15% BAC, the BFS would see an increase of at least 260 samples per year (potentially 300 per year based on 2016 statistics); thereby doubling the number of blood samples tested for drugs on DUID-related requests. Based on current request statistics, the BFS would expect to test over 515 blood samples for drugs in DUID-related requests.

By adding the LC-MS/MS technology to the laboratory's capabilities, the BFS would be able to increase the number of blood samples tested for drugs by over 100% of current sample load. In addition to the increase volume of samples, the array of drugs tested for would be increased to all "Tier 1" drugs as specified by the NHTSA.

In addition to the ability to test for more drugs and achieve an increase in sensitivity, the BFS has approached Napa County for their interest in partnering with the BFS for testing of DUID samples.

- Napa County has averaged nearly 40 cases (per year) over the past two years for DUI cases involving drugs or a combination of alcohol and drugs.

Agency Qualifications:

The Solano County District Attorney's Office, Bureau of Forensic Services (BFS) is a division of a Solano County Criminal Justice agency.

The BFS currently performs toxicology testing of blood and urine for criminal casework. The BFS staff, once fully trained on the LC-MS/MS instrument and validated methods, should be adequate for providing the full spectrum of testing of Tier 1 drugs for Solano County once the requested instrument is acquired and fully validated.

Current staff possess all necessary educational qualifications for toxicological testing of blood and urine. Training will be required upon acquiring the new instrument. Initial training for use of the instrument is provided by the manufacturer of the instrument. Further training is accessible to staff through various state and national professional associations. This training will occur as part of the implementation plan outlined in this grant request.

The instrument in this grant request will replace and update current technology within the BFS and provide the ability to enhance and expand the current program. As this will increase efficiency as well as provide the ability to identify and quantitate a greater spectrum of drugs from the current program, the criminal justice system will be enhanced by a greater ability to prosecute those suspected of DUID.

Program Sustainability:

The funds for acquisition of the LC-MS/MS instrument would come through this requested grant. It will be necessary for the county general fund BFS budget to sustain the long-term use of the instrument for ongoing maintenance and service agreements, consumable testing items, and other miscellaneous expenses required for maintaining highly advanced technology.

Neither Solano County nor the BFS have previously received funds from OTS for this grant project. The Solano County DA's Office has previously requested this funding through the Vertical Prosecution Program. In each previous request, funds for the LC-MS/MS instrument has been denied.

To this point, the BFS has not identified any other resources for funding this instrument acquisition. Without OTS grant funding, the BFS will maintain current service and efficiency levels. The BFS will be actively looking for additional funding opportunities to enhance the various programs provided.

The Solano County District Attorney's Office currently receives OTS grant funding for the Vertical Prosecution Grant Program. By addition of this instrument grant, that program should see more efficiency through faster turnaround times as well as the ability to prosecute for DUID involving a greater variety of drugs.

The BFS will primarily rely on county general funds for ongoing laboratory testing activities. The BFS will, however, continue to research additional funding sources to assist with ongoing and enhancement of activities.

Goals

Applicant-Defined Goals

Custom Description	Target Number
Acquire LC-MS/MS Instrument	1
Establish LC-MS/MS technology as primary method for forensic DUID toxicology testing for the Solano County DA, BFS	2
Increase spectrum of drugs tested to include all NHTSA recommended Tier 1 drugs	3
Increase sensitivity for detection and quantitation of drugs to NHTSA recommended levels for Tier 1 drugs	4
Decrease overall turnaround time for DUID toxicology testing	5

Objectives

Applicant-Defined Objectives. Users have the option to delete after adding if necessary.

Select?	Target Number	Custom Description
Yes	1	Instrument Acquisition (Following award of grant) - Instrument evaluation for ensuring technical specifications and required elements for County Purchasing & grant agency. - Purchase of Instrument (through County Request for Proposal) o Bid Process o Purchase/Contract with Manufacturer - Site preparation - Installation of instrument by manufacturer
Yes	2	Training - On-site training by manufacturer for utilizing the LC-MS/MS - Off-site training for staff for method validation and pharmacology to ensure adequate knowledge of drugs to be tested.
Yes	3	Validation - Method validation for drugs to be tested. Utilizing OTS grant-funded overtime, validation will be a sequential building of methods to achieve ability to test for all Tier 1 drugs.
Yes	4	- Establish lab testing process work flow for efficient processing of samples. - Establish streamlined flow for evaluation, review, and reporting of test data to ensure efficient publishing of test reports.

Method of Procedure

Phase 1 - Program Preparation:

- Develop operational plans to implement the “best practice” strategies outlined in the objectives section

Identify additional work (tasks) to be conducted in order to accomplish the stated objectives.

Once notified of grant award, the BFS will begin site preparations for ensuring the laboratory meets all necessary infrastructure requirements and begin instrument purchasing process:

1. Prepare laboratory space for the LC-MS/MS instrument.
 - a)Evaluation of current and expanded electrical needs
 - b)Prepare ventilation infrastructure to handle the expanded needs.
 - c)Determine any additional cabinetry needs or reconfiguration to accommodate the instrument footprint
- 2)Working with Solano County Purchasing Department, initiate RFQ (Bid Specifications) for instrument purchase
 - a) Determine final specifications for the instrument
 - b)Ensure county, state and federal purchasing requirements are incorporated.
- 3) Begin preparations and evaluation of employee training.
 - a) Determine entire scope of instrument and method validation.
 - b)Determine needs for purchasing of consumable supplies to conduct instrument and method validation
 - c)Determination of specific training programs or workshops.

Media Requirements

- Issue a press release announcing the kick-off of the grant by November 15, but no earlier than October 1. If unable to meet the November 15 date, communicate reasons to your OTS Coordinator. The kick-off press releases and any related media advisories, alerts, and materials must be emailed for approval to the OTS Public Information Officer at pio@ots.ca.gov, and copied to your OTS Coordinator, 14 days prior to the issuance date of the release.

Phase 2 - Program Operations:

Once the purchasing process has been initiated, the plan for validation of the instrument and methods will begin. Final plans cannot be completed until selection of the instrument. The BFS has secured commitment from both the Orange County Crime Lab and the California Dept. of Justice, Sacramento Crime Lab for assistance with method development and validation. Working with those two organizations will streamline planning and development. In addition, this will assist in development of consistency of operations for a good segment of the State of California.

Upon completion of the purchasing Request for Proposals, the instrument will be selected and final purchasing arrangement will be made. Following this, validation and method plans can begin final planning stages. Upon delivery of the instrument, staff will begin working with the instrument. Manufacturer's onsite training will be

scheduled so that staff will ensure proper familiarity with the instrument occurs. Training by the manufacturer will include both use and care of the instrument. During the period between selection of the instrument and validation, staff will undergo external training for method validations as well as pharmacology for substances new to analysis.

Following the training on the instrument, BFS staff will begin validation for the various methods required to implement casework. This will be done incrementally as different methods and sensitivities are required for different drug classes. As soon as a method has been validated, casework for those drug classes will begin. Coordination of casework with other ongoing validation will be required during this period to ensure expedient completion of the project in its entirety.

Media Requirements

- Send all grant-related activity press releases, media advisories, alerts and general public materials to the OTS Public Information Officer (PIO) at pio@ots.ca.gov, with a copy to your OTS Coordinator. The following requirements are for grant-related activities and are different from those regarding any grant kick-off release or announcement.
1. If an OTS-supplied, template-based press release is used, there is no need for pre-approval, however, the OTS PIO and Coordinator should be copied when at the same time as the release is distributed to the press.
 2. If an OTS-supplied template is not used, or is substantially changed, a draft press release shall be sent to the OTS PIO for approval. Optimum lead-time would be 10 days prior to the release distribution date, but should be no less than 5 working days prior to the release distribution date.
 3. Press releases reporting the immediate and time-valued results of grant activities such as enforcement operations are exempt from the recommended advance approval process, but still should be copied to the OTS PIO and Coordinator when the release is distributed to the press.
 4. Activities such as warrant or probation sweeps and court stings that could be compromised by advanced publicity are exempt from pre-publicity, but are encouraged to offer embargoed media coverage and to report the results.
- Use the following standard language in all press, media, and printed materials: Funding for this program was provided by a grant from the California Office of Traffic Safety, through the National Highway Traffic Safety Administration.
 - Email the OTS PIO at pio@ots.ca.gov and copy your OTS Coordinator at least 30 days in advance, a short description of any significant grant-related traffic safety event or program so OTS has sufficient notice to arrange for attendance and/or participation in the event.
 - Submit a draft or rough-cut of all printed or recorded material (brochures, posters, scripts, artwork, trailer graphics, etc.) to the OTS PIO at pio@ots.ca.gov and copy your OTS Coordinator for approval 14 days prior to the production or duplication.
 - Space permitting, include the OTS logo, on grant-funded print materials; consult your OTS Coordinator for specifics and format-appropriate logos.
 - Contact the OTS PIO or your OTS Coordinator, sufficiently far enough in advance of need, for consultation when deviation from any of the above requirements might be contemplated.

Phase 3 - Data Collection:

- Invoice Claims (due January 30, April 30, July 30, and October 30)
- Quarterly Performance Reports (due January 30, April 30, July 30, and October 30)
 - Collect and report quarterly, appropriate data that supports the progress of goals and objectives.
 - Provide a brief list of activity conducted, procurement of grant-funded items, and significant media activities. Include status of grant-funded personnel, status of contracts, challenges, or special accomplishments.
 - Provide a brief summary of quarterly accomplishments and explanations for objectives not completed or plans for upcoming activities.
 - Collect, analyze and report statistical data relating to the grant goals and objectives.

Budget

Personnel Costs

Positions - Enter full-time, part-time, hourly, or salaried positions in this section. For Benefits, start the Item Name with the word 'Benefits', enter the corresponding salary or overtime total amount in the Unit Cost or Rate column, and enter the Benefits Rate to have the system calculate Benefit Costs as Unit Cost * Benefits Rate. For related Benefits for the example position (100.0 and 100.1) for Benefits.

Display Order	Item Name	Benefit Rate	Unit Cost or Rate	Units	Percent Paid by Grant	Calculated Cost to Grant
	None		\$0.00			\$0.00
Display Order	Cost Category	Enforcement Activity	Item Name	Unit Cost or Rate	Units	Calculated Cost to Grant
1.0	A. Personnel Costs	Other	Overtime	\$68.00	200	\$13,600.00
Personnel Costs: \$13,600.00						

Travel Expenses

Display Order	Cost Category	Item Name	Unit Cost or Rate	Units	Calculated Cost to Grant
200.0	B. Travel Expenses	Out-of-State Travel	\$4,000.00	2	\$8,000.00
Travel Expenses: \$8,000.00					

Contractual Services

Display Order	Cost Category	Item Name	Unit Cost or Rate	Units	Calculated Cost to Grant
300.0	C. Contractual Services	LIMS Computer Integration	\$10,000.00	1	\$10,000.00

Contractual Services: \$10,000.00

Equipment (must have Unit Cost of at least \$5000)

Display Order	Cost Category	Item Name	Unit Cost or Rate	Units	Calculated Cost to Grant
400.0	D. Equipment	Liquid Chromatograph with Tandem Mass Spectrometer	\$380,000.00	1	\$380,000.00

Equipment: \$380,000.00

Other Direct Costs

Display Order	Cost Category	Item Name	Unit Cost or Rate	Units	Calculated Cost to Grant
500.0	E. Other Direct Costs	Consumable Testing Supplies	\$25,000.00	1	\$25,000.00

Other Direct Costs: \$25,000.00

Indirect Costs

Item Name should indicate the % and the Cost Category for Indirect Costs e.g. 15% of Salaries and Benefits. Use the Percent Paid by Grant for the Indirect Rate and the Unit Cost or Rate field to indicate the total amount for which Indirect Costs will be claimed. The system will calculate the Cost to Grant.

Display Order	Cost Category	Item Name	Indirect Rate	Amount Subject to Indirect	Calculated Cost to Grant
600.0	F. Indirect Costs	None			\$0.00

Indirect Costs: \$0.00

Total Requested Funding: \$436,600.00

Narrative Review

Review and update Narrative for Budget Items

Item	Narrative
None	None
Overtime	Overtime for grant objective of instrument and method validation.
Out-of-State Travel	Costs are included for appropriate staff to attend conferences and training events supporting the grant goals and objectives and/or traffic safety. Local mileage for grant activities and meetings is included. Anticipated travel may include (enter other known conferences or required events). All conferences, seminars or training not specifically identified in the Budget Narrative must be approved by OTS. All travel claimed must be at the agency approved rate. Per Diem may not be claimed for meals provided at conferences when registration fees are paid with OTS grant funds.
LIMS Computer Integration	Contractual Services for the integration of LC-MS/MS data analysis software with Laboratory Information Management System (LIMS).
Liquid Chromatograph with Tandem Mass Spectrometer	Purchase of LC-MS/MS instrument to meet primary grant objective.
Consumable Testing Supplies	Consumable supplies for sample testing to complete the instrument and method validation in support of the grant objectives.
None	None

Upload Documents (Optional)

Please try to include all information in the application itself, but if necessary, upload additional documents here

Document Name	Update Date/Time
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Evaluation, Support, and Submittal

Evaluation, Support, and Submittal

Method of Evaluation:

Using the data compiled during the grant, the Grant Director will complete the "Final Evaluation" section in the fourth/final Quarterly Performance Report (QPR). The Final Evaluation should provide a brief summary of the grant's accomplishments, challenges and significant activities. This narrative should also include whether goals and objectives were met, exceeded, or an explanation of why objectives were not completed.

Administrative Support:

This program has full administrative support, and every effort will be made to continue the grant activities after grant conclusion.

Total Requested Funding:

\$436,600.00