



University Transportation Research Center
RFP Cover Sheet

Title: Drone/Unmanned Aircraft System (UAS) Regulations and Policies for Use in New Jersey
Proposal Number: 2017-03
Sponsor: NJDOT
Date Issued: October 20, 2016
Pre-Proposal Meeting: TBD
RFP Due at NJDOT: November 18, 2016
RFP Closing Date: **November 18, 2016**

If you plan to apply:

Please contact Camille Crichton-Sumners, (research.bureau@dot.nj.gov, 609-530-5966) to request a pre-proposal meeting, and so that you will receive information about this meeting if it is held. The date to request by is, November 18, 2016.

If you plan to submit a proposal through UTRC, please notify us by email at peickemeyer@utrc2.org and indicate whether you are open to teaming up with faculty at other universities on this project.

Proposal submission guidelines:

When you apply, please use the UTRC cover sheets for technical proposal and budget available at <http://www.utrc2.org/resources>. Proposals must be submitted directly to NJDOT by the closing date.

Proposals must be prepared in accordance with NJDOT's Information and Instructions for Preparing Proposals. Please visit:

<http://www.state.nj.us/transportation/refdata/research/pdf/techpropresproj.pdf>

For questions about preparing the technical proposal:

All questions are to be directed to Camille Crichton-Sumners by sending an e-mail to Research.Bureau@dot.nj.gov or by phone (609-530-5966).

For questions about budget preparation:

Contact Penny Eickemeyer, peickemeyer@utrc2.org. NJDOT has not specified a budget or timeline for this project.

Note that matching funds cannot be made available from UTRC for this RFP.

[Visit the NJDOT Research Website for important information about this RFP](http://www.state.nj.us/transportation/refdata/research/research_procurement)

http://www.state.nj.us/transportation/refdata/research/research_procurement



New Jersey Department of Transportation
Bureau of Research
RESEARCH PROJECT
Request for Proposal
2016/17 Program

Date of RFP
10/20/2016

Closing Date
11/18/2016

Drone/Unmanned Aircraft System (UAS)
Regulations and Policies for Use in New Jersey
Project No.: 2017-03

(Proposals must be prepared in accordance with NJDOT's *Information and Instructions for Preparing Proposals*. Please visit: <http://www.state.nj.us/transportation/refdata/research/pdf/techpropresproj.pdf>
Revised Proposal Evaluation Forms are available for your information on the website.)

Proposals will be based on the merit of the information contained in the proposal. Budgets will be evaluated separately. Please place three (3) copies of the budget for this project in a separate sealed envelope.

A completed Pre-award Risk Assessment Form A shall be submitted with the proposal.

1 - RESEARCH PROBLEM STATEMENT, BACKGROUND, AND OBJECTIVES

1-1. Purpose. This Request for Proposal (RFP) provides to those interested ("Universities") in submitting proposals for the subject procurement sufficient information to enable them to prepare and submit proposals for the New Jersey Department of Transportation's (NJDOT's) consideration on behalf of the State of New Jersey to satisfy a need for the Project.

1-2. Issuing Office. The Bureau of Research ("Issuing Office") has issued this RFP on behalf of the NJDOT. The sole point of contact in the NJDOT for this RFP shall be the Research Bureau Manager ("Issuing Officer"), Camille Crichton-Summers, Bureau of Research, NJDOT 1035 Parkway Avenue Trenton NJ 08625, Research.Bureau@dot.nj.gov. Please refer all inquiries to the Issuing Officer.

1-3. Scope. This RFP contains instructions governing the requested proposals, including the requirements for the information and material to be included; a description of the service to be provided; requirements which Universities must meet to be eligible for consideration; general evaluation criteria; and other requirements specific to this RFP.

1-4. Problem Statement. The NJDOT Bureau of Aeronautics needs a comprehensive set of UAS (Unmanned Aircraft System or drone) regulations and policies. These new UAS regulations must comply with and enhance existing Federal regulations such as 14 CFR Part 107 UAS regulations and FAA Advisory Circular 107-2.

NJDOT also needs new regulations to incorporate our unique safety and risk management concerns, and fully integrate them with established best UAS practices. New regulations must cover all UAS operations conducted on behalf of NJDOT, whether it's by our public employees, a consultant firm, or a commercial UAS vendor.

New Jersey's Cape May Airport is one of the FAA's six test sites for UAS technology. Although most NJDOT requirements can be conducted under 14 CFR Part 107, Cape May has been granted a COA (FAA Certificate of Authorization) that allows them the flexibility to operate beyond the limitations of 14 CFR Part 107. They often deploy UAS larger than 55 pounds and are permitted to integrate UAS into the NAS (National Airspace Structure) above 400 feet. Any new regulation must take into account the unique requirements of our FAA UAS test site at Cape May Airport.

Several NJDOT sections have requested support from the Multi-Modal Division with requests for UAS support. The new regulations need to take into consideration, but not be limited to, the following areas of operation:

1. Bridge Inspection
2. High Mast Light Pole Inspection
3. Traffic Management
4. Crash Scene Documentation
5. Emergency management
6. Identify areas of large potholes or longitudinal joints that are separating.
7. Identify areas of litter or vegetation needs.
8. Periodical assessment of performance by crews on the job. Live.
9. Check for flooding post storm or drainage issues pre storm.
10. Monitor pre winter storm brine spreading.
11. Monitor during storm; position of resources. If possible?
12. Bridge scouring monitoring post storm.
13. Better identify vegetation in need of spraying during spring campaigns to stop vegetation spread.
14. Identify center barrier hits and guiderail hits.
15. Drainage outfall inspections.
16. Normal, IR or thermal images of concrete surfaces to identify spalling.
17. Inspection or Drainage outfalls.
18. Confirming Straight Line Diagram (SLD) accuracy
19. Assisting in installation mark outs (for signs, etc.)
20. Addressing/observing drainage areas that are not easily accessible
21. Observing traffic back-ups and queue lengths behind highway incidents
22. Use drones to get photos of Department events (internal or external) such as press conferences.
23. Investigate 5010 Obstacle Mapping
24. Aerial Site Surveys
25. Observing queue lengths to provide a qualitative assessment of congested interchanges.
26. Providing cheap aerals to discuss existing conditions and fly overs of corridors for existing conditions/concept development.
27. Record intersections with high volumes and turning movements to really understand what's happening at difficult locations.
28. Parking studies – surveying parking lots and counting spaces
29. Post-disaster inspections of hard-to-reach areas and facilities
30. Search for missing boats and/or boaters/dropping life-saving devices
31. Photography/video for reports and studies/aerial cityscape videos and pictures

32. Inspections of railroad tracks
33. Real-time construction project updates
34. Real-time on the ground conditions of roadways and land use sites
35. Scoping out potential rights-of-way
36. Assisting in cartography/GIS production
37. Surveys for determining transit station center points or location of development footprints inside or outside of a Transit Village
38. Sending consultant packages back and forth

1-5. Type of Contract. It is proposed that if the Issuing Office enters into a contract because of this RFP, it will be a **Cost Reimbursement, Deliverable-based** contract containing the Standard Contract Terms and Conditions. The Issuing Office, in its sole discretion, may undertake negotiations with **one or more** Universities whose proposals, in the judgment of the Issuing Office, show them to be qualified, responsible, and capable of performing the Project.

1-6. Disadvantaged Business Information. The New Jersey Department of Transportation is committed to providing opportunities for Disadvantaged Business Enterprises to compete for work. To support this commitment, there is a goal of twelve point seven nine percent (12.79%) of the total contract dollar amount set for this RFP.

It is suggested that you utilize organizations certified by NJDOT's DBE Unified Certification Program (NJ UCP) as listed on the NJDOT webpage.

1-7. Best and Final Offers.

- A. While not required, the Issuing Office reserves the right to conduct discussions with Universities for obtaining "best and final offers." To obtain best and final offers from Universities, the Issuing Office may do one (1) or more of the following, in any combination and order:
 1. Schedule oral presentations;
 2. Request revised proposals;
 3. Enter into pre-selection negotiations.
- B. The Evaluation Criteria found in Part 2, Section 2-4, shall also be used to evaluate the Best and Final offers.

1-8. News Releases. Universities shall not issue news releases, Internet postings, advertisements, or any other public communications pertaining to this Project without prior written approval of the Issuing Office and then only in coordination with the Issuing Office.

1-9. University Representations and Authorizations. By submitting its proposal, each University understands, represents, and acknowledges that:

- A. All of the University's information and representations in the proposal are material and important, and the Issuing Office may rely upon the contents of the proposal in awarding the contract(s). The

Department shall treat any misstatement, omission, or misrepresentation as fraudulent concealment of the facts relating to the Proposal submission.

- B. The University has arrived at the price(s) and amounts in its proposal independently and without consultation, communication, or agreement with any other University or potential University unless it's a joint proposal.
- C. The University has not disclosed the price(s), the amount of the proposal, nor the approximate price(s) or amount(s) of its proposal to any other firm or person who is a University or potential University for this RFP. The University shall not disclose any of these items on or before the proposal submission deadline specified in the Calendar of Events of this RFP.
- D. The University has not attempted, nor will it attempt, to induce any firm or person to refrain from submitting a proposal on this contract, or to submit a proposal higher than this proposal, or to submit any intentionally high or noncompetitive proposal or other form of complementary proposal.
- E. The University makes its proposal in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive proposal.
- F. To the best knowledge of the person signing the proposal for the University, the University, its affiliates, subsidiaries, officers, directors, and employees are not currently under investigation by any governmental agency. The aforementioned representative(s) have not in the last four years been convicted or found liable for any act prohibited by State or Federal law in any jurisdiction, involving conspiracy or collusion with respect to bidding or proposing on any public contract, except as the University has disclosed in its proposal.
- G. To the best of the knowledge of the person signing the proposal for the University and except as the University has otherwise disclosed in its proposal, the University has no outstanding, delinquent obligations to the NJDOT including, but not limited to, any state tax liability not being contested on appeal or other obligation of the University that is owed to the Department.
- H. The University is not currently under suspension or debarment by the NJDOT, any other state or the federal government, and if the University cannot so certify, then it shall submit along with its proposal a written explanation of why it cannot make such certification.
- I. The University has not made, under separate contract with the Issuing Office, any recommendations to the Issuing Office concerning the need for the services described in its proposal or the specifications for the services described in the proposal.

2 - PROPOSAL REQUIREMENTS

2.1. Please visit: <http://www.state.nj.us/transportation/refdata/research/pdf/techpropresproj.pdf> for the proposal submission requirements. Proposals **shall not** be accepted without fulfilling the requirements in the document.

2-2. Objections and Additions to Contract Terms and Conditions. The University will identify which, if any, of the terms and conditions it would like to negotiate and what additional terms and conditions the University would like to add to the standard contract terms and conditions. The University's failure to make a submission

under this paragraph will result in waiving its right to do so later, but the Issuing Office may consider late objections and requests for additions if to do so, in the Issuing Office's sole discretion, would be in the best interest of the Department. The Issuing Office may, in its sole discretion, accept or reject any requested changes to the standard contract terms and conditions.

The University shall not request to completely substitute its own terms and conditions nor request changes to the other provisions of the RFP. All terms and conditions must appear in one (1) integrated contract. The Department reserves the right to select more than one Institution of Higher Education. The Issuing Office will not accept references to the University, or any other, online guides or online terms and conditions contained in any proposal.

Regardless of any objections set out in its proposal, the University must submit its proposal, including the separate sealed cost proposal, based on the terms and conditions of the contract. The Issuing Office will reject any proposal that is conditioned on the negotiation of the terms and conditions set out in the contract or to other provisions of the RFP as specifically identified above.

2-3. Disadvantaged Business Enterprise (DBE) Involvement. Provide detailed information describing the NJDOT DBE Unified Certification Program (NJDOT UCP) certified DBE. Include the business name of the DBE with the address, contact person, phone number, the NJDOT DBE Unified Certification Program (NJDOT UCP) certification number, a detailed narrative of the services to be provided, and the percent of the proposal's total cost to be contractually allocated to the DBE. No cost information can be displayed in the technical proposal.

Physical certification letters and/or expiration dates should not be requested from DBE certified firms. DBE certification does not expire. If no DBE is qualified, available, or willing to participate, the contractor must provide detailed, verifiable information describing the good faith effort made to locate a DBE. If the good faith effort is determined to be unacceptable, the proposal may be disqualified or other action taken.

2-4. Criteria for Selection. Please see the NJDOT Research Process for Review and Evaluation of Proposals at <http://www.state.nj.us/transportation/refdata/research/pdf/researchprocess.pdf>.

3 - WORK STATEMENT

3-1. Research Objectives

1. **How many crew members are required and what are the roles and responsibilities for each?**
2. **Small UAS Operations Near Aeronautical Facilities—Notification and Permissions.**

Federal regulations stipulate that UAS must operate in a manner that does not interfere with airport operations, traffic patterns, approach corridors, heliports, and seaplane bases. New Jersey is one of the most densely populated areas of the country and has 43 Public Use Airports and another 400 restricted use aeronautical facilities.

The following 14 NJ airports are surrounded by Controlled Airspace and will require procedures for ATC coordination and special training for NJDOT operators;

| | | |
|-------------------------|-------------|-------------------|
| Atlantic City | Linden | Princeton |
| Caldwell | McGuire AFB | Burlington County |
| Cape May | Millville | Teterboro |
| Central Jersey Regional | Morristown | Trenton Mercer |
| Lakehurst | Newark | |

3. **Methods of effective communication between crew members.** Communication methods must be established prior to each operation. Can communication-assisting devices, such as a hand-held radios or cellphones be safely used to facilitate clear communication?
4. **Temporary Flight Restrictions.** How should UAS crews check for applicable NOTAMs, TFRs, or airspace restrictions before each flight?
5. **Local environmental assessment.** An assessment of the local operating environment needs to include at least the following:
 - a) The aviation weather conditions at the launch site using FAA approved aviation weather formats such as METARS and TAF's.
 - b) The location of non-participating persons and private property.
 - c) The position of other aircraft and potential hazards in the airspace.
 - d) The determination that the UA does not endanger the life or property of others
6. **The criteria for selecting suitable Launch and Recovery Sites.**
7. **UAS Maintenance, Inspections, and Condition for Safe Operation.**
How do we establish and verify that the UAS is in a condition for safe operation?
8. **Pre and post flight checklists.**
9. **Emergency and Contingency procedures.**
10. **Suggested internal paperwork, pre and post flight checklists, and forms.**

All UAS manufacturers have written preflight inspection checklists but this needs to be incorporated into a larger checklist that covers all aspects of flight operations, not just the aircraft itself.

A sample manufacturer's pre-flight checklist of the aircraft itself might look something like the following;

- Visually inspect the condition of the unmanned aircraft system components
- Inspect the airframe structure, including undercarriage, all flight control surfaces and linkages
- Inspect registration markings for proper display and legibility
- Inspect moveable control surface(s), including airframe attachment point(s)
- Inspect servo motor(s), including attachment point(s)
- Inspect the propulsion system, including power plant(s), propeller(s), rotor(s), etc.

- Verify all systems (e.g. aircraft, control unit) have an adequate energy supply for the intended operation and are functioning properly
- Inspect the avionics, including control link transceiver, communication/navigation equipment and antenna(s)
- Calibrate UAS compass prior to any flight
- Inspect the control link transceiver, communication/navigation data link transceiver, and antenna(s)
- Check that the display panel, if used, is functioning properly
- Check ground support equipment, including takeoff and landing systems, for proper operation
- Check that control link correct functionality is established between the aircraft and the control station
- Check for correct movement of control surfaces using the control station
- Check on board navigation and communication data links
- Check flight termination system, if installed
- Check fuel for correct type and quantity
- Check battery levels for the aircraft and control station
- Check that any equipment, such as a camera, is securely attached
- Verify communication with UAS and that the UAS has acquired GPS location from at least 4 satellites
- Start the UAS propellers to inspect for any imbalance or irregular operation
- Verify all controller operation for heading and altitude
- If required by flight path walk through, verify any noted obstructions that may interfere with the UAS
- At a controlled low altitude, fly within range of any interference and recheck all controls and stability

11. Procedures to minimize driver distractions in order to prevent accidents and reduce congestion.

12. Accident Reporting. Current Federal regulations require a remote UAS PIC to notify the FAA within 10 days of an accident. What about reports to agencies within NJDOT?

13. NJDOT Staff Training required in addition to the 14 CFR Part 107 Remote Pilot certificate.

- a) An FAA Part 107 Remote Pilot certificate is the minimum standard to legally fly in NJ but does not require any practical experience or address the risk management concerns of public operators like NJDOT.
- b) What supplemental training is required to mitigate these risks?

14. Insurance requirements.

- a) How should NJDOT address the insurance requirements for UAS operations by employees or consultants under NJDOT contract?
- b) Are we covered under the NJDOT blanket self-insured policy?
- c) Growth in commercial drones operations will bring multiple benefits but also new risks due to following factors;

- d) Current FAA regulations do not address the experience or risk management issues for UAS operators under 14 CFR Part 107.
- e) The numbers of unmanned aircraft systems (UAS) will surge as they become smaller and cheaper.
- f) UAS can accomplish dangerous tasks but they also raises safety concerns such as risk of collision, terrorist attacks, or a cyber-incident.
- g) Robust education and training of UAS operators will be necessary to ensure safer skies, as reports of near-misses increase.

15. Incorporate federal and NJ legislation affecting the use of UAS to include but not limited to;

- a) Unwarranted surveillance
- b) DEP prohibition on flying UAS in NJ State Parks.
- c) Harassment of wildlife
- d) Applicable local ordinances

3-2. Tasks

[Provide a listing of appropriate general tasks divided into phases based on types of work (e.g., laboratory, field) or by year (e.g., year 1, year 2) or other appropriate milestones]

The NJDOT is seeking the insight of proposal responders on how best to achieve the research objectives. Proposers are expected to describe a research effort that can realistically be accomplished as expeditiously as possible. Proposals must present the proposers' current thinking in sufficient detail to demonstrate their understanding of the problem and the soundness of their approach for conducting the required research.

PHASE I – Literature Search

Conduct a literature search of the current state of the practice.

After the award of the project, a more comprehensive literature search should be conducted. At the completion of this literature search, the PI may be asked to make a presentation to the Research Project Selection and Implementation Panel to discuss their findings and to discuss the appropriate research approach.

PHASE II – Research Approach and Anticipated Results

Clear description of how you will solve the problem and implement anticipated findings. Work may be divided into phases (e.g., Laboratory, Field or Year 1, Year 2) as necessary to clarify tasks. *Exit Criteria* must be developed during this phase.

3-3. Implementation and Training Plan

The PI must meet with the Research Project Selection and Implementation Panel (RPSIP) and other NJDOT units to present the findings and as appropriate train these personnel in the use the project results.

The PI will develop an implementation plan as per the guidelines provided by NJDOT Research Bureau. All training shall be provided by licensed personnel on the subject matter. The training hours should count toward PDHs where feasible.

3-4. Emergency Preparedness: To support continuity of operations during an emergency, including a pandemic, the Department needs a strategy for maintaining operations for an extended period. One part of this strategy is to ensure that essential contracts that provide critical business services to the Department have planned for such an emergency and put contingencies in place to provide needed goods and services.

1. Describe how you anticipate such a crisis will affect your operations.
2. Describe your emergency response continuity of operations plan. Please attach a copy of your plan, or at a minimum, summarize how your plan addresses the following aspects of pandemic preparedness:
 - a) Employee training (describe your organization's training plan, and how frequently your plan will be shared with employees).
 - b) Identify key employees (within your organization) and their essential business functions.
 - c) Identify contingency plans for:
 - i. How your organization will handle staffing issues when a portion of key employees are incapacitated due to illness.
 - ii. How employees in your organization will carry out the essential functions if contagion control measures prevent them from coming to the primary workplace.
 - d) Explain how your organization will communicate with staff and suppliers when primary communications systems are overloaded or otherwise fail, including key contacts, chain of communications (including suppliers), etc.
 - e) Explain how and when your emergency plan will be tested, and if the plan will be tested by a third party.

3-5. Deliverables

[List of minimum deliverables necessary to complete the project]

- Presentation of Summary of Literature Search Results
- Discussion to Support and Refine the Project Tasks
- Project work plan. A work plan for each task that identifies the work elements of each task, the resources assigned to the task, and the time allotted to each element and the deliverable items to be produced. Where appropriate, a PERT or Gantt chart display should be used to show monthly/ quarterly project, task, and time relationship. Please follow the Figure 1 at a minimum for each year.
- Include a fee proposal breakdown (Figure 2, below) for each proposed year of the project and total life of the project, in addition to the NJDOT Bureau of Research budget preparation guidelines.
- Monthly Time Line Chart With Corresponding Activities and Deliverables
- Meeting Minutes of All Meetings Conducted With Customers, RPM and Other Project Stakeholders Submitted Electronically Within 48 Hours of Meeting
- Quarterly Reports in the latest format version provided to RPM and customers prior to Quarterly Meeting Schedule
- Technical Memorandum on survey results
- Technical memorandum on measures that are working or not working
- Technical memorandum on actions taken
- Interim Status reports suitable for Senior Leadership if required
- Draft Final Report and Draft Tech Brief is due in hard copy and electronic format to the customers and RPM three (3) months before the end date of the project contract for review, comments and incorporation of comments

- **Final Report Package:** Final Report and Tech Brief, with appropriate tables, graphs and charts in hard copy version, PDF file format, Word, and on CD ROM in accordance with the latest version of the "Guidelines for Preparing NJDOT Research Final Reports and Tech Briefs", are due prior to final invoice submittal of the project to allow time for review by the RPSIP. The Final Acceptance will be granted upon receipt of two copies plus one per RPSIP member of each presentation, technical memorandum, draft final report, and Final Report (plus 10 copies).

3-6. Oral Presentations. Oral presentations are requested as part of this RFP. To schedule your oral presentation with the Bureau of Research, utilize the contact information in Section 5. It is preferred that oral presentations should be completed within 14 days from the Closing Date of this RFP. They will be held at NJDOT headquarters in Trenton, NJ, and attended by the Research Customer and members of the Bureau of Research.

4 - CONTRACT TIME

The PI must provide the anticipated research study duration based on the proposed tasks. Consideration should be given to potential impediments so that adjustments are incorporated into the schedule minimizing the need for time extensions. Please be advised that going forward, new task orders having permissible justification will be allowed no more than one time extension with the advent of 2 CFR 200.

A **22 - 24 month** time frame would be preferred.

5 - CONTACTS

In lieu of a pre-proposal meeting interested parties shall send all questions related to this RFP to the Research Manager prior to **October 30, 2016**. Questions on this topic **shall not** be directed to any Research Project Manager, Research Customer, or any other NJDOT person. All questions are to be directed to Camille Crichton-Sumners by sending an e-mail to Research.Bureau@dot.nj.gov or by phone (609-530-5966).

6 – BUDGET

Only the first year's funds will be authorized. Subsequent years may be funded by contract modification on an annual basis, based on appropriation of funds and performance.

The NJDOT Bureau of Research reserves the right to hold between 10 and 20% of the total project budget until final acceptance of the Final Report Package by the RPM and customer.

7 - DEADLINE

**Proposals (10 single-bound copies) are due at the NJDOT Bureau of Research
no later than **5:00 p.m.** on November 18, 2016**

Authorization to Begin Work: Approximately 05/01/17. The official start date is the date that the Bureau of Research obtains a signature from the Assistant Commissioner.



PROPOSAL DELIVERY INSTRUCTIONS:

For private, paid messenger services such as Federal Express, DHL, UPS, etc., or for hand-carried deliveries:

2017-03 PROPOSAL-NJDOT
New Jersey Department of Transportation
Bureau of Research
1035 Parkway Avenue
Trenton, New Jersey 08625-0600

For U.S. Postal Service mail:

New Jersey Department of Transportation
ATTN: Camille Crichton-Sumners
Manager, Bureau of Research
P.O. Box 600
Trenton, New Jersey 08625-0600



| Fee Proposal Breakdown | | NJDOT Bureau of Research University Task Order for: | | | | | | | | | | | | | | |
|--|--|---|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-----------|----------|
| | | Name of Research Study | | | | | | | | | | | | | | |
| | | Name of Institution | | | | | | | | | | | | | | |
| | | Task 1 | | Task 2 | | Task 3 | | Task 4 | | Task 5 | | Task 6 | | | | |
| Name | Title | Hrly Rate | Hours | \$ | Total Hrs | Total \$ |
| Faculty 1 | Professor | | | \$0.00 | | \$0.00 | | \$0.00 | | \$0.00 | 0 | \$0.00 | 0 | \$0.00 | 0 | \$ - |
| Faculty 2 | Associate Professor | | | \$0.00 | | \$0.00 | | \$0.00 | | \$0.00 | 0 | \$0.00 | 0 | \$0.00 | 0 | \$ - |
| Graduate Assistant | Supporting Role | | | \$0.00 | | \$0.00 | | \$0.00 | | \$0.00 | 0 | \$0.00 | 0 | \$0.00 | 0 | \$ - |
| Total Hours and Direct Labor Cost | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fringe Benefits: | | | | | | | | | | | | | | | | |
| B: Fringe Benefit rates 1 | 0.00% | | | | | | | | | | | | | | | \$ - |
| B: Fringe Benefit rates 2 | 0.00% | | | | | | | | | | | | | | | \$ - |
| B: Fringe Benefit rates 3 | 0.00% | | | | | | | | | | | | | | | \$ - |
| Direct Expenses (Itemize and explain in detail) | | | | | | | | | | | | | | | | |
| Supplies | Name all the supplies with unit cost, Quantity, and total cost on a separate sheet | | | | | | | | | | | | | | | |
| Travel | Breakdown the travel according to mileage | | | | | | | | | | | | | | | |
| Tuition | Breakdown needed for tuition | | | | | | | | | | | | | | | |
| Subcontract Expenses | | | | | | | | | | | | | | | | \$0 |
| Subcontract 1 | Subcontractors need to breakdown their budget similar to the prime | | | | | | | | | | | | | | | |
| Subcontract 2 | | | | | | | | | | | | | | | | |
| Total Direct Expenses | | | | | | | | | | | | | | | | \$0 |
| Indirect Costs/Overhead | | | | | | | | | | | | | | | | \$0.00 |
| Grand Total | | | | | | | | | | | | | | | | \$0 |

Figure 2: Sample Fee Proposal Breakdown