EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 3-02

☐ Other ☐ Amendment Number:

Contract Number: EP-D-14-031

Contract Period: 10/01/2014 To 09/30/2018

Base Option Period Number: 3

Title of Work Assignment/SF Site Name: Reduced Form Modeling and Tech

Contractor: INDUSTRIAL ECONOMICS, INCORPORATED

Specify Section and paragraph of Contract SOW:

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 10/01/2017 To 09/30/2018

Comments:

THE PURPOSE OF THIS ACTION IS TO INITIATE WA 3-02 "REDUCED FORM MODELING AND TECHNICAL SUPPORT" FOR AN INITIAL LOE OF 200 HOURS FOR START UP WORK. ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED. THIS WORK DOES NOT DUPLICATE ANY WORK PREVIOUSLY PERFORMED UNDER MY AUTHORITY.

☐ Superfund — **Accounting and Appropriations Data** — [X] Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period: 10/01/2014 To 09/30/2018 Cost/Fee: LOE:

This Action:

Total:

Work Plan / Cost Estimate Approvals

Contractor WP Dated: Cost/Fee LOE:

Cumulative Approved: Cost/Fee LOE:

Work Assignment Manager Name: Jeremy Martinich
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WORK ASSIGNMENT

Title: Reduced Form Modeling and Technical Support

Work Assignment Manager/COR:

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STATEMENT OF WORK
Reduced Form Modeling and Technical Support

TASKS

The Contractor shall perform the work described below in the following tasks.

Task 0. Develop Workplan and Project Management

The Contactor shall provide a workplan outlining the approach, resources, timeline, and estimated costs for all tasks listed below. Estimates of costs and hours shall be presented by professional level and month. The Work Assignment Manager (WAM) will review the workplan and will request revisions and or changes as needed. If necessary, the Contractor shall incorporate EPA comments into the final workplan.

The Contractor shall provide project management under this task. During the period of performance, the Contractor shall immediately inform the WAM and CO by telephone and/or email of any problems that may impede performance along with any corrective actions needed by the EPA or the Contractor to solve the problem.

Under this task, the Contractor shall also attend a kick-off meeting via conference call to discuss the goals and strategy for completing future deliverables on a schedule to be determined. This kick-off meeting will serve as a discussion to clarify the EPA's requirements, solicit ideas and feedback from the Contractor, as well as formulate ideas for work to be completed by the Contractor under the Tasks listed below. The Contractor will also participate in one or more wrap-up discussions at the end of the period of performance, or when the necessary support has been completed, to discuss work completed under the tasks below.

Deliverable	**Due Date**
Task 0.1: Participate in kick-off meeting	Within 5 business days of work assignment issuance.
Task 0.2: Workplan and cost estimate to EPA	Within 20 days after receipt of this work assignment.
Task 0.3: Monthly status report	By 10th business day each month, or another agreed upon date with the COR.
Task 0.4: Participate in wrap-up discussion	Due dates for these discussion will be outlined in technical direction.

Task 1. Conduct New Reduced Form Modeling

Objective: The Contractor shall support EPA in developing a framework that will enable production of temperature related functions for monetized impacts in the United States. These

functions should be designed for use with simple projection models to enable nimble response to requests for analysis for new scenarios. The framework can also provide a risk analysis framework for the impacts of exceeding given temperature targets. There are two key aspects to this approach: choosing projections that span the full future range of possibilities, and determining how to make the economic aspects of the sectoral damage analyses a post-processor type of calculation rather than endogenous. With these two considerations, the reduced form functions should be flexible in terms of formulation (potentially capturing non-linearities such as thresholds or saturation) and in terms of application (such that they would not be limited to specific dates or economic conditions).

In completing this Task, the Contractor shall perform the following steps:

1. Projection Data: The Contractor shall process projection data based on specifications provided by EPA, and develop detailed documentation of methods use for developing the projections. The Contractor shall also work with EPA to identify a public-facing repository for posting this projection data (so that interested parties can access the data).

2. Simulate Sectoral Impacts: As resource constraints require choosing a subset of sectoral models, the Contractor shall run the following CIRA2.0 models (listed in order of descending priority) using the projections developed in Step 1:
   - Labor
   - Extreme temperature mortality*
   - Coastal property*
   - Roads*
   - Inland flooding
   - Rail infrastructure*
   - Water quality (USBASINS only)
   - Coral reefs
   - West Nile Virus
   - Freshwater fish
   - Bridges*
   - Dust impacts analysis (see Task 3 of this Work Assignment)

   *The Contractor shall simulate these sectors under the no adaptation, reactive adaptation, and proactive adaptation scenarios being developed separately from this Work Assignment.
   **Noting that Electricity Supply/Demand and Electricity Distribution/Power Interruptions will be run using separate funding vehicles, with results supplied to the Contractor for use in subsequent steps of this Task.

3. Develop Response Functions: Using sectoral impacts results produced in the previous step, the Contractor shall calculate temperature response functions for the sectoral model in natural units.

4. Perform and Document Quality Assurance Checks: The Contractor shall work closely with the modeling teams to perform and document quality checks of all sectoral output data to ensure that the results are accurate and complete in accordance with EPA information quality guidance.

5. Monetization: The Contractor shall work with EPA to develop an approach for monetizing impacts, including the consideration of decoupling socio-economic assumptions (i.e., monetize the impacts as a function of GDP, rather than in simple dollars, in order to be able to use with different future time periods and/or economic scenarios).

6. Test Application: The Contractor shall test the response functions by comparing the results to CIRA2.0 results (to see how well the new approach reproduces results calculated using the process-based impact models).

7. Data Preparation: The Contractor shall prepare all sectoral output data (in both raw and summarized forms) for posting to public-facing repository. The spreadsheets shall be appropriately organized and described to enable comprehension by others.

8. Develop Spreadsheet Tool: The Contractor shall develop a spreadsheet tool with the embedded functions to enable EPA usage.

9. Publication: The Contractor shall work with the EPA in developing a manuscript for publication of the methods and results in a peer-reviewed journal. Through implementation of this Task, the Contractor shall carefully document all methods, data sources, and limitations for inclusion in the peer-reviewed manuscript (either in main text or extended supplementary information). The Contractor shall plan for paying open access publication fees.

Deliverable	**Due Date**
Task 1.1: Documentation memo on projection processing methods used. Data posted to public repository.	No later than January 1st, 2018
Task 1.2: All sectoral modeling completed.	No later than April 30th, 2018
Task 1.3: Memo and/or presentation describing results of test.	No later than May 31st, 2018
Task 1.4: Draft manuscript for submittal to journal.	No later than July 1st, 2018
Task 1.5: Spreadsheet tool delivered to EPA	No later than August 1st, 2018

Task 2. Provide Technical Authorship in Support of National Assessment

The purpose of this task is to provide support to the coordinating lead authors working on a major federal assessment report. Under Work Assignment #2-02, the Contractor identified and selected experts to support the writing of two assessment chapters. This task provides similar support in the new option period, with the majority of effort focused on responding to peer and public review comments.

Deliverable	Due Date
Task 2.1: Author contributions and revisions to assessment chapters	Rolling basis per assessment report schedule.

Task 3. Dust Impact Analysis

Using projection data from CIRA2.0 and projections developed under Task 2, the Contractor shall apply an existing statistical methodology to quantify dust impacts on health, with a particular focus on the Southwest. The Contractor shall develop a memo describing all methodological steps taken, and provide summaries of results based on specifications agreed upon by EPA. The Contractor shall work closely with the modeling teams to perform and document quality checks of all output data to ensure that the results are accurate and complete. The Contractor shall prepare spreadsheets of all output data (in both raw and summarized forms).

Deliverable	Due Date
Task 3.1: Method and results memo	No later than January 1st, 2018
Task 3.2: Spreadsheet of data	No later than March 1st, 2018

Task 4. Technical Support and Quick Turnaround Assistance

As the above tasks proceed, EPA is likely to require technical support and quick turnaround assistance related to the work outlined in this SOW. The Contractor shall be expected to perform five of these technical support tasks, each requiring approximately 40 hours of work. As requested per technical direction from the COR, the Contractor shall support EPA by:

- Providing background materials for presentations/briefings.
- Small technical analysis related to the subjects of this work assignment.
- Drafting sectoral impacts summaries and communication products.

As stated above, this work will be initiated through technical direction, and these communications will include specific details regarding the work, including delivery dates.

Deliverable	Due Date
Task 4.1: Technical support deliverable as defined in technical direction from the COR.	Within 3 weeks of initial technical direction from the COR.

IV. PERIOD OF PERFORMANCE

The period of performance for this Work Assignment is from date of issuance to September 30th, 2018.