

*The National Academies of*  
SCIENCES • ENGINEERING • MEDICINE

DIVISION ON EARTH AND LIFE STUDIES

WATER SCIENCE AND TECHNOLOGY BOARD

Proposal No. 10002851

U.S. FLOOD RISK MANAGEMENT FOR THE TWENTY-FIRST CENTURY:  
A GUIDE TO NATIONAL PROGRAMS AND UNDERLYING CONCEPTS

September 2015

*For*   
David P. Westbrook  
Director  
Office of Contracts and Grants  
National Academy of Sciences  
Telephone: (202) 334-2254  
E-mail: dwestbro@nas.edu

  
Jeffrey Jacobs  
Director  
Water Science and Technology Board  
Division on Earth and Life Studies  
Telephone: (202) 334-3422  
E-mail: jjacobs@nas.edu

The National Academies consists of four organizations: the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine, and the National Research Council. The National Research Council is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering. **This proposal is submitted by the NATIONAL ACADEMY OF SCIENCES (NAS), which assumes full technical and legal responsibility under its Act of Incorporation for the work to be carried out under any resultant agreement.** We are a nonprofit publicly supported organization exempt from federal income tax under Internal Revenue Service Code section 501(C)(3). The Taxpayer Identification Number is 53-0196932. DUNS Number is 04-196-4057. **Awards resulting from this proposal should be issued to NATIONAL ACADEMY OF SCIENCES and payment directed to:**

**National Academy of Sciences**  
Accounting Office  
ATTN: Cash Management Section  
500 Fifth Street, NW  
Washington, DC 20001  
Telephone: 202-334-3351 or 202-334-1476

(rev. 2/27/09)

*The National Academies of*  
SCIENCES • ENGINEERING • MEDICINE

Division on Earth and Life Studies

Executive Director  
500 Fifth Street NW  
Washington, DC 20001

September 18, 2015  
RE: NAS Proposal No. 10002851

Mr. Steven Stockton  
Director of Civil Works  
U.S. Army Corps of Engineers  
441 G Street, NW  
Washington, DC 20314

Dear Mr. Stockton:

We are pleased to submit the enclosed proposal, prepared by our Water Science and Technology Board. The proposal requests partial support for the study "U.S. Flood Risk Management for the Twenty-first Century: A Guide to National Programs and Underlying Concepts." The total estimated cost of this study is \$575,000, of which \$150,000 is requested from the U.S. Army Corps of Engineers for the 18-month period January 1, 2016 to June 30, 2017.

An ad hoc committee will identify and explain national flood risk management programs of greatest importance and relevance, along with related technical concepts. The committee will produce a succinct, authoritative report summarizing these programs and concepts. The report will be written to be accessible to citizens and decision makers seeking to increase their knowledge of flood risks and of relevant federal programs, activities, and processes for managing flood risks.

The responsible staff officer for this activity is Dr. Edmond Dunne of the Water Science and Technology Board. He may be contacted regarding program matters at 202-334-3136. Business negotiations are the responsibility of Mr. Douglas E. Denning, Contract Manager, Office of Contracts and Grants. He may be reached at 202-334-1422.

We shall appreciate your early consideration of this matter.

Sincerely,

  
for Gregory H. Symmes, Ph.D.  
Executive Director

cc: Bruce Carlson

THE NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE  
DIVISION ON EARTH AND LIFE STUDIES  
WATER SCIENCE AND TECHNOLOGY BOARD

U.S. FLOOD RISK MANAGEMENT FOR THE TWENTY-FIRST CENTURY:  
A GUIDE TO NATIONAL PROGRAMS AND UNDERLYING CONCEPTS

SUMMARY

The Water Science and Technology Board of The National Academies of Sciences, Engineering, and Medicine is undertaking a study on “U.S. Flood Risk Management for the Twenty-first Century: A Guide to National Programs and Underlying Concepts.” An ad hoc committee will identify and explain national flood risk management programs of greatest importance and relevance, along with related technical concepts. The committee will produce a succinct, authoritative report summarizing these programs and concepts. The report will be written to be accessible to citizen and decision makers seeking to increase their knowledge of flood risks and of relevant federal programs, activities, and processes for managing flood risks.

The total estimated cost of this activity is \$575,000, of which \$150,000 is requested from the U.S. Army Corps of Engineers for the 18-month period of approximately January 1, 2016 to June 30, 2017. Additional funds will be requested from other federal agencies.

BACKGROUND

Programs, authorities, and responsibilities for managing flood risks in the United States are divided among a large number of federal, state, local, and tribal entities. At the federal level, many of these responsibilities and activities are carried out by the Federal Emergency Management Agency (FEMA) and the U. S. Army Corps of Engineers (Corps). Broadly, FEMA administers the National Flood Insurance Program (NFIP) and federal disaster aid, and has many other important pre- and post-disaster activities, and the Corps carries out its flood risk management responsibilities largely via levee and floodwall construction and maintenance. Several other federal agencies have complementary programs, but the nation clearly looks to FEMA and the Corps as lead federal agencies in preparing for, mitigating against, and responding to floods and recovering from flood damages.

The technical knowledge and expertise, and related policy and programmatic details, that underpin the FEMA and Corps programs is extensive. This knowledge draws from fields of engineering (civil, geotechnical, hydrologic, and environmental), geology, economics, business and public administration, law, risk and decision sciences, insurance, public policy analysis, geography (including mapping sciences), regional planning, and actuarial sciences. Practitioners within and analysts of national flood risk management programs generally have backgrounds in one or more of these areas. No single expert could be expected to have command of these many fields and detailed knowledge of the many FEMA and Corps programs and processes, and other

related federal programs and activities. Examples of these concepts and programs include: the 100-year flood and other return periods; Special Flood Hazard Areas; Flood Insurance Rate Maps; mandatory flood insurance purchase requirements; benefit-cost requirements and studies of federal flood protection projects; hydrologic risk and nonstationarity; levee certification processes; and, limits and regulations regarding post-disaster flood recovery aid.

The citizen in a low-lying coastal area or floodplain seeking more information likely would be daunted in trying to comprehend this large body of information (along with the challenge of locating and accessing this disparate information). This is an important point, as effective execution of the NFIP and other federal flood programs relies upon a citizenry and NFIP policy holders with reasonable understanding of flood risks, and policies and programs for managing these risks. Numerous analysts have noted the limited or skewed human understanding of flood risks, and how this often leads to poor investment and related decisions. Better understanding of these flood-related concepts and programs is important as the federal government increasingly looks to states and communities to play larger roles in financing and planning of flood risk reduction projects, community design and floodplain management, and other important flood risk initiatives (e.g., disaster warning and flood hazard public education).

A single, authoritative document that distills and explains the nation's primary flood risk management programs, and key underlying concepts would have great value in educating citizens and decision makers in communities at risk of flooding. The proposed project thus should be of considerable interest to federal agencies with flood risk management programs--especially FEMA and the Corps--the U.S. Congress, governors, citizens and elected officials in flood prone areas, and experts in flood hydrology, engineering, and floodplain management.

### PLAN OF ACTION

An ad hoc committee will identify and explain national flood risk management programs of greatest importance and relevance, along with related technical concepts. The committee will produce a succinct, authoritative report summarizing these programs and concepts. The report will be written to be accessible to citizens and decision makers seeking to increase their knowledge of flood risks and of relevant federal programs, activities, and processes for managing flood risks.

The committee's consensus report will serve as an authoritative guide for decision makers and citizens with interests in these topics, but that may be overwhelmed or frustrated in trying to interpret this large body of technical and programmatic information. The committee of approximately 13 individuals will hold four meetings in the course of the project and will plan to include open public sessions to gather a broad variety of opinions and perspectives on national flood risk management. The committee will be comprised of members with expertise in the engineering and scientific issues reflected in the statement of task including civil, geotechnical, hydrologic, and environmental engineering.

The project also will produce shorter communications products derived from the committee's report. There will be extensive outreach efforts before and during the course of the study, development of a special project website, and post-report activities to highlight the report messages and enhance public awareness of the report. The project will aim to build a public audience from the study's inception, and keep that audience engaged through the course of the study with meeting announcements and opportunities to provide input.

Vigorous outreach efforts are planned for every stage of the project. These will include direct contact with project sponsors and other relevant organizations. A project website will be created, and there will be ample opportunities for interested parties to provide comments and questions for the expert committee's consideration, which will be included in the project's Public Access File. Parts of the committee's open, public meetings will be webcast. The project will seek to engage outside observers, including bloggers, Tweeters, and science writers, to comment on issues relevant to the study as it progresses. Following report release, the committee will engage in additional outreach efforts (examples include webinars and a project video). Dissemination and informational efforts will continue for approximately 3 months after release of the committee's report.

### ANTICIPATED RESULTS

The committee will produce a report summarizing the national flood risk management programs of greatest importance and relevance, along with related technical concepts. The report will be written to be accessible to citizen and decision makers seeking to increase their knowledge of flood risks and of relevant federal programs, activities, and processes for managing flood risks.

The audience for this project includes all of the following entities that have interests in flood and coastal storm hazards, structural measures for reducing flood risks, and programs for mitigating against flood risks: the U.S. Congress, state governors, state-level elected officials, mayors, emergency managers, National Flood Insurance Program policyholders, and citizens in floodplains and along shorelines that are at risk of flooding and storm surge inundation.

Within the federal government, the Army Corps and FEMA will serve as co-sponsors and have immediate interest. Other agencies with interest include HUD, NOAA, the USGS, and EPA.

The report also will be of interest to experts in academia and the private sector who study and advise upon flood risk management issues, including floodplain mapping, flood insurance, flood mitigation measures, and perception of flood risk.

### PUBLIC INFORMATION ABOUT THE PROJECT

In order to afford the public greater knowledge of Academy activities and an opportunity to provide comments on these activities, the Academy will post on its website ([www.national-](http://www.national-)

academies.org) the following information about the project as appropriate under its procedures: (1) notices of meetings open to the public; (2) brief descriptions of projects; (3) committee appointments (including biographies of committee members); (4) report information; and (5) any other pertinent information.

#### FEDERAL ADVISORY COMMITTEE ACT

The Academy has developed policies and procedures to implement Section 15 of the Federal Advisory Committee Act, 5 U.S.C. App., Section 15. Section 15 includes certain requirements regarding public access and conflicts of interest that are applicable to agreements under which the Academy, using a committee, provides advice or recommendations to a Federal agency. In accordance with its Congressional Charter and the requirements of Section 15, the Academy must provide independent, unbiased advice without actual or perceived interference or management of the outcome (findings and recommendations). Therefore, the Academy requires the right to publish all unclassified materials without any restriction over content and release, including any restriction that may require prior approval from the sponsoring agency.

In accordance with Section 15 of FACA, the Academy shall submit to the government sponsor(s) following delivery of each applicable report a certification that the policies and procedures of the Academy that implement Section 15 of FACA have been substantially complied with in the performance of the contract/grant/cooperative agreement with respect to the applicable report.

#### ESTIMATE OF DURATION AND COSTS

The total estimated cost of this activity is \$575,000, of which \$150,000 is requested from the U.S. Army Corps of Engineers for the 18-month period of approximately January 1, 2016 to June 30, 2017. Additional funds will be requested from other federal agencies.

**THE NATIONAL ACADEMIES  
OF SCIENCES, ENGINEERING AND MEDICINE**

DIVISION ON EARTH AND LIFE STUDIES  
WATER SCIENCE AND TECHNOLOGY BOARD

Proposal No. 10002851

**U.S. FLOOD RISK MANAGEMENT FOR THE TWENTY-FIRST CENTURY:  
A GUIDE TO NATIONAL PROGRAMS AND UNDERLYING CONCEPTS**

USACE Cumulative Summary Estimate of Costs

1/1/16 to 06/30/17

	AMOUNT
Direct Labor	\$49,787
Overhead	\$29,235
Overhead Cost of Money	\$2,053
Travel	\$23,839
Reports	\$3,170
Technology/Communication	\$4,156
Meeting Expense	\$2,948
Other Direct Costs	<u>\$5,071</u>
	Subtotal:
	\$120,259
General and Administrative Costs	\$29,103
G&A Cost of Money	\$638
	Total:
	\$150,000

Amount Requested From USACE

**\$150,000**

It is requested that the award will provide for payment  
via Letter of Credit or electronic transfer.

Footnote: These major cost categories reflect the billing structure used by the National Academy of Sciences. Cost and rate data are attached as background information and for use in the negotiation process. Please be advised, however, that all costs are systematically collected in our accounting system and are available for audit through arrangements with the Defense Contract Audit Agency and our cognizant Administrative Contracting Officer at the Office of Naval Research.

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USACE Cumulative Summary Estimate of Costs

1/1/16 to 12/31/16

	AMOUNT
Direct Labor	\$33,000
Overhead	\$19,378
Overhead Cost of Money	\$1,361
Travel	\$22,250
Technology/Communication	\$2,758
Meeting Expense	\$2,948
Other Direct Costs	<u>\$918</u>
	Subtotal:
	\$82,613
General and Administrative Costs	\$19,992
G&A Cost of Money	\$438
	Total:
	\$103,043

Amount Requested From USACE

\$103,043

Footnote: These major cost categories reflect the billing structure used by the National Academy of Sciences. Cost and rate data are attached as background information and for use in the negotiation process. Please be advised, however, that all costs are systematically collected in our accounting system and are available for audit through arrangements with the Defense Contract Audit Agency and our cognizant Administrative Contracting Officer at the Office of Naval Research.



**ESTIMATION DETAILS PROVIDED FOR NEGOTIATION PURPOSES ONLY**

**THE NATIONAL ACADEMIES**

NATIONAL ACADEMY OF SCIENCES  
INSTITUTE OF MEDICINE

NATIONAL ACADEMY OF ENGINEERING  
NATIONAL RESEARCH COUNCIL

DIVISION ON EARTH AND LIFE STUDIES

WATER SCIENCE AND TECHNOLOGY BOARD

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**Estimate of Costs**

1/1/16 to 12/31/16

12 months

<b>DIRECT LABOR, ON-SITE</b>	Percent of Time	Annual Salary	Total Salary	Project Totals	USACE Request		
<b>EXEMPT</b>							
Board Director	20%	\$144,300	\$28,860		\$7,529		
Financial Associate	11%	\$81,600	\$9,139		\$2,384		
Staff Officer	40%	\$79,300	\$31,720		\$8,275		
Communications Officer	4%	\$120,500	\$4,820		\$1,257		
Communications Specialist	2%	\$62,315	\$1,246		\$325		
<b>TOTAL EXEMPT</b>				\$75,785	\$19,770		
<b>NON-EXEMPT</b>							
Senior Project Assistant	40%	\$41,200	\$16,480		\$4,299		
<b>TOTAL NON-EXEMPT</b>				\$16,480	\$4,299		
Total Salaries				\$92,265	\$24,069		
Salary Adjustments [1]				<u>\$1,615</u>	<u>\$421</u>		
<b>Total Direct Labor, On-Site (2)</b>				<b>\$93,880</b>	<b>\$24,490</b>		
<b>Fringe Benefits @</b>	34.75%	of Salaries		<b><u>\$32,623</u></b>	<b><u>\$8,510</u></b>		
<b>TOTAL DIRECT LABOR, ON-SITE, PLUS FRINGE</b>				<b>\$126,503</b>	<b>\$33,000</b>		
OVERHEAD, On-site	58.72%	of Base		\$74,283	\$19,378		
COST OF MONEY (Labor)	4.1250%	of Base		\$5,218	\$1,361		
<b>TOTAL OVERHEAD, On-Site (3)</b>				<b>\$79,501</b>	<b>\$20,739</b>		
<b>OTHER DIRECT COSTS</b>							
<b>Travel Expenses (Domestic)</b>							
	#Pers.	#Mtg	Days/ Mtg	#Per X Mtg.	Mtg Cost	\$ \Mtg	Subtotal
Experts	13	4	2	52	\$1,523	\$79,196	
Staff	2	2	2	4	\$1,523	\$6,092	
						\$6,092	
<b>Total Travel</b>						<b>\$85,288</b>	<b>\$22,250</b>

**Other Costs**

<b>Photocopies (6)</b>	\$95 /mo		\$1,140	\$297
<b>Postage and Delivery</b>				
Project	\$90 /mo		\$1,080	\$282
<b>Technology/Communications</b>				
Conference Calls	1 @	\$150.00	\$150	\$39
Technology Services (7)	\$868.45 /mo		\$10,421	\$2,719
<b>Office supplies</b>	\$100 /mo		\$1,200	\$313
<b>Meeting Expenses</b>			\$11,300	\$2,948
<b>Books and Periodicals (e.g., newsletters, interlibrary loan)</b>			\$100	\$26
<b>Total Other</b>			<b>\$25,391</b>	<b>\$6,624</b>
<b>TOTAL OTHER DIRECT COSTS</b>			<b>\$110,679</b>	<b>\$28,874</b>
<b>SUBTOTAL</b>			<b>\$316,683</b>	<b>\$82,613</b>
General & Administrative Costs	24.20% of Net Direct Labor, Overhead, and Direct Costs.		\$76,637	\$19,992
Cost of Money	0.5300% of Net Direct Labor, Overhead, and Direct Costs.		\$1,678	\$438
<b>TOTAL GENERAL AND ADMINISTRATIVE COSTS (8)</b>			<b>\$78,315</b>	<b>\$20,430</b>
<b>TOTAL ESTIMATED COST</b>			<b>\$394,998</b>	<b>\$103,043</b>
<b>Amount Requested From USACE</b>			<b>\$103,043</b>	

It is requested that the award will provide for payment via Letter of Credit or electronic transfer.

FOOTNOTES

1. An annual adjustment is applied to the salary base to provide for merit increases that will be awarded during the performance period of any award resulting from this proposal. The effective date for estimating such adjustments is June 1. The current merit pool is 3.0%

2. Direct Labor includes an accrual for personal leave, holidays, and other leave, such as jury duty and military service, at a rate of 17.00%

3. The total On-site/Off-site Overhead rates include Facilities Capital Cost of Money factors.

The National Academies annually draw upon more than 11,600 volunteer scientists, engineers, and other professionals, largely from universities and industry. This donated professional expertise provides an invaluable resource to the Federal Government and Private Sponsors and results in significant overall savings to the funding organization.

4. Reports	Master		
	Manuscript	Reports	HTML CONV.
Estimated report production (copies)	0	0	0
Estimated report per copy cost	\$0.00	\$0.00	\$0.00
Estimated total report charge	\$0.00	\$0.00	\$0.00

5. Executive Order 12832 provides the authority for NAS to reproduce and disseminate Academy reports to the public as needed and therefore we have included in our estimate of costs an amount projected to cover the cost of producing and disseminating reports for this activity.

6. Copying

Estimated pages	19,000
Cost per page	\$0.0600

Copying is estimated on a monthly basis. The total estimated copying charge is derived by determining the total estimated number of pages that might be reproduced based on similar projects undertaken by NAS and multiplying by the per copy cost.

7. Technology Services

(Total Full-time Equivalent employees reflected in estimated salaried staff and on-site borrowed personnel percent of time in Direct Labor section of estimate.)

Technology Services Cost \$342.00

Technology services charge equals Prorated labor hours times the total basic equipment charge, and prorated telephone and fax/modem usage, times the number of pay periods (bi-weekly) covered by the estimate.

8. NOTE: The total G&A rate includes a Facilities Capital Cost of Money rate, as approved in NAS's ONR negotiated rate agreement.

The use of all rates in this proposal has been approved by the Administrative Contracting Officer, Office of Naval Research, to assist sponsors in accurate forward pricing. The NAS indirect rates are negotiated with the Office of Naval Research on a yearly basis. For contract billing purposes, the rates proposed may change for subsequent fiscal years, and it is understood that any contractually-stipulated indirect rate would be modified in accordance with any revised negotiated indirect rates. Indirect rates include the corresponding negotiated rate agreement Facilities Cost of Money factors.

9. The Subagreements/Flow-Thru Administration rate includes a facilities capital cost of money factor applied to the subagreement/flow-thru.

<b>Federal Negotiated Indirect Cost Rate Agmt - 12/19/14</b>			
<b>NAS FY 15 FIXED RATES</b>	<b>Rate Before Cost of Money</b>	<b>Cost of Money Additive</b>	<b>Total Rate</b>
Offsite Overhead	30.65%	0.000%	30.6500%
Regular Overhead	58.72%	4.1250%	62.8450%
Flow-through Admin	3.40%	0.3096%	3.7096%
G&A	24.20%	0.5300%	24.7300%
Leave	17.00%	0.000%	17.00%
Fringe	34.75%	0.000%	34.75%
<b>PRICES</b>			
Prices are determined on an actual-cost basis, but are not included in the Negotiation Agreement with ONR.			
			<b>Total Price</b>
Copy Center		per impression	\$0.0600
Technology Services, bi-weekly		bi-weekly	\$342.00
Pay Periods	26	2.16667 per month	

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USACE Cumulative Summary Estimate of Costs

1/1/17 to 06/30/17

	AMOUNT	
Direct Labor	\$16,787	
Overhead	\$9,857	
Overhead Cost of Money	\$692	
Travel	\$1,589	
Reports	\$3,170	
Technology/Communication	\$1,398	
Other Direct Costs	<u>\$4,153</u>	
	Subtotal:	
	\$37,646	
General and Administrative Costs	\$9,111	
G&A Cost of Money	\$200	
	Total:	
	\$46,957	
Amount Requested From USACE	<table border="1"><tr><td>\$46,957</td></tr></table>	\$46,957
\$46,957		

Footnote: These major cost categories reflect the billing structure used by the National Academy of Sciences. Cost and rate data are attached as background information and for use in the negotiation process. Please be advised, however, that all costs are systematically collected in our accounting system and are available for audit through arrangements with the Defense Contract Audit Agency and our cognizant Administrative Contracting Officer at the Office of Naval Research.

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**Estimate of Costs**

1/1/17 to 6/30/17

6 months

<b>DIRECT LABOR, ON-SITE</b>	Percent of Time	Annual Salary	Total Salary	Project Totals	USACE Request			
<b>EXEMPT</b>								
Board Director	20%	\$144,300	\$14,430		\$3,764			
Financial Associate	11%	\$81,600	\$4,570		\$1,192			
Staff Officer	40%	\$79,300	\$15,860		\$4,137			
Communications Officer	4%	\$120,500	\$2,410		\$629			
Communications Specialist	2%	\$62,315	\$623		\$163			
<b>TOTAL EXEMPT</b>				<b>\$37,893</b>	<b>\$9,885</b>			
<b>NON-EXEMPT</b>								
Senior Project Assistant	40%	\$41,200	\$8,240		\$2,150			
<b>TOTAL NON-EXEMPT</b>				<b>\$8,240</b>	<b>\$2,150</b>			
Total Salaries				\$46,133	\$12,035			
Salary Adjustments <b>[1]</b>				<u>\$1,621</u>	<u>\$423</u>			
<b>Total Direct Labor, On-Site (2)</b>				<b>\$47,754</b>	<b>\$12,458</b>			
<b>Fringe Benefits @</b>	34.75%	of Salaries		<b><u>\$16,595</u></b>	<b><u>\$4,329</u></b>			
<b>TOTAL DIRECT LABOR, ON-SITE, PLUS FRINGE</b>				<b>\$64,349</b>	<b>\$16,787</b>			
OVERHEAD, On-site	58.72%	of Base		\$37,786	\$9,857			
COST OF MONEY (Labor)	4.1250%	of Base		\$2,654	\$692			
<b>TOTAL OVERHEAD, On-Site (3)</b>				<b>\$40,440</b>	<b>\$10,549</b>			
<b>OTHER DIRECT COSTS</b>								
<b>Travel Expenses (Domestic)</b>								
	#Pers.	#Mtgs	Days/ Mtg	#Per X Mtg.	Mtg Cost	\$ \Mtg	Subtotal	
Diss.	2	2	2	4	\$1,523	\$6,092		
							\$6,092	
<b>Total Travel</b>							<b>\$6,092</b>	<b>\$1,589</b>

**Other Costs****Reports (4) (5)**

Master Manuscript	1 copies		\$5,900	
Report Prod.	250 copies @	\$25.00	\$6,250	
<b>Total Reports</b>				\$12,150

**Photocopies (6)**

	\$95 /mo		\$570	\$149
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**Postage and Delivery**

Project	\$90 /mo		\$540	\$141
Report disseminations	225 @	\$2.25	\$506	\$132

**Technology/Communications**

Conference Calls	1 @	\$150.00	\$150	\$39
Technology Services (7)	\$868.45 /mo		\$5,211	\$1,359

**Office supplies**

	\$100 /mo		\$600	\$157
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**Books and Periodicals (e.g., newsletters, Interlibrary loan)**

Video			\$6,000	\$1,565
Webinars			\$3,500	\$913
Web/online derivative			\$4,000	\$1,043

**Total Other**

	\$33,432	\$8,721
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**TOTAL OTHER DIRECT COSTS**

	\$39,524	\$10,310
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**SUBTOTAL**

	\$144,313	\$37,646
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General & Administrative Costs	24.20% of Net Direct Labor, Overhead, and Direct Costs.	\$34,924	\$9,111
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Cost of Money	0.5300% of Net Direct Labor, Overhead, and Direct Costs.	\$765	\$200
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**TOTAL GENERAL AND ADMINISTRATIVE COSTS (8)**

	\$35,689	\$9,311
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**TOTAL ESTIMATED COST**

	\$180,002	\$46,957
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**Amount Requested From USACE**

	\$46,957
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It is requested that the award will provide for payment via Letter of Credit or electronic transfer.

FOOTNOTES

1. An annual adjustment is applied to the salary base to provide for merit increases that will be awarded during the performance period of any award resulting from this proposal. The effective date for estimating such adjustments is June 1. The current merit pool is 3.0%

2. Direct Labor includes an accrual for personal leave, holidays, and other leave, such as jury duty and military service, at a rate of 17.00%

3. The total On-site/Off-site Overhead rates Include Facilities Capital Cost of Money factors.

The National Academies annually draw upon more than 11,600 volunteer scientists, engineers, and other professionals, largely from universities and industry. This donated professional expertise provides an invaluable resource to the Federal Government and Private Sponsors and results in significant overall savings to the funding organization.

4. Reports	Master		
	Manuscript	Reports	HTML CONV.
Estimated report production (copies)	1	250	0
Estimated report per copy cost	\$5,900.00	\$25.00	\$0.00
Estimated total report charge	\$5,900.00	\$6,250.00	\$0.00

5. Executive Order 12832 provides the authority for NAS to reproduce and disseminate Academy reports to the public as needed and therefore we have included in our estimate of costs an amount projected to cover the cost of producing and disseminating reports for this activity.

6. Copying

Estimated pages	9,500
Cost per page	\$0.0600

Copying is estimated on a monthly basis. The total estimated copying charge is derived by determining the total estimated number of pages that might be reproduced based on similar projects undertaken by NAS and multiplying by the per copy cost.

7. Technology Services

(Total Full-time Equivalent employees reflected in estimated salaried staff and on-site borrowed personnel percent of time in Direct Labor section of estimate.)

Technology Services Cost \$342.00

Technology services charge equals Prorated labor hours times the total basic equipment charge, and prorated telephone and fax/modem usage, times the number of pay periods (bi-weekly) covered by the estimate.

8. NOTE: The total G&A rate includes a Facilities Capital Cost of Money rate, as approved in NAS's ONR negotiated rate agreement.

The use of all rates in this proposal has been approved by the Administrative Contracting Officer, Office of Naval Research, to assist sponsors in accurate forward pricing. The NAS indirect rates are negotiated with the Office of Naval Research on a yearly basis. For contract billing purposes, the rates proposed may change for subsequent fiscal years, and it is understood that any contractually-stipulated indirect rate would be modified in accordance with any revised negotiated indirect rates. Indirect rates include the corresponding negotiated rate agreement Facilities Cost of Money factors.

9. The Subagreements/Flow-Thru Administration rate includes a facilities capital cost of money factor applied to the subagreement/flow-thru.



<b>Federal Negotiated Indirect Cost Rate Agmt - 12/19/14</b>			
<b>NAS FY 15 FIXED RATES</b>	<b>Rate Before Cost of Money</b>	<b>Cost of Money Additive</b>	<b>Total Rate</b>
Offsite Overhead	30.65%	0.000%	30.6500%
Regular Overhead	58.72%	4.1250%	62.8450%
Flow-through Admin	3.40%	0.3096%	3.7096%
G&A	24.20%	0.5300%	24.7300%
Leave	17.00%	0.000%	17.00%
Fringe	34.75%	0.000%	34.75%
<b>PRICES</b>			
Prices are determined on an actual-cost basis, but are not included in the Negotiation Agreement with ONR.			
			<b><u>Total Price</u></b>
Copy Center		per impression	\$0.0600
Technology Services, bi-weekly		bi-weekly	\$342.00
Pay Periods	26	2.16667 per month	