

SUPPORTING STATEMENT
U.S. Department of Commerce
National Oceanic & Atmospheric Administration
Developing, Testing, and Evaluating Methods for Transitioning the Brief Vulnerability Overview
Tool (BVOT) to NWS Weather Forecasting Office Operations
OMB Control No. 0648-XXXX

SUPPORTING STATEMENT PART A

Abstract

In alignment with the Weather Forecasting and Innovation Act of 2017 (Pub. L. 115-25), this is a request for a new collection of information that cannot be merged with other existing collections.

The proposed collection is sponsored through NOAA's FY2021 Weather Program Office's Social Science Program, and addresses the Social, Behavioral, and Economic Sciences (SBES) component of meeting NOAA's Research and Development (R&D) Vision Areas (2020-2026) to integrate SBES into products, tools, and services that improve weather and air quality forecasting and societal outcomes. This collection develops, tests, and evaluates methods that can be used by National Weather Service Weather Forecasting Offices (WFOs) to collect operationally actionable vulnerability data in their County Warning Areas (CWAs). Specifically, the collection evaluates a range of methods in different types of WFOs across 4 NWS regions to populate unique Brief Vulnerability Overview Tools (BVOT) for each WFO. The BVOT 1) contributes to increasing messaging-under-uncertainties between NWS WFOs and core partners (e.g., Emergency Managers (EMs)), by 2) collecting and displaying critical data related to CWA vulnerabilities that are 3) ultimately put into a GIS-based, Impact Decisional Support Services (IDSS)-focused tool that can be integrated into the Advanced Weather Interactive Processing System (AWIPS). The results of the collection will benefit all elements of the operational weather enterprise and the publics that it serves by improving NWS WFO awareness of vulnerabilities so that they can better target messaging to EMs and other core partners in order to protect lives and property.

Justification

- 1. Explain the circumstances that make the collection of information necessary. Identify any legal or administrative requirements that necessitate the collection. Attach a copy of the appropriate section of each statute and regulation mandating or authorizing the collection of information.**

Without this type of local vulnerability information, NOAA, and the NWS specifically, is limited in its ability to meet its mission of saving lives and property as outlined in the Weather Research and Forecasting Innovation Act of 2017 (especially Public Law 115-25 Sec. 405.d.1.A, 405.d.1.B, Sec 406.c.2.B). This effort aims to advance the Tornado Warning Improvement and Extension Program (TWIEP)'s goal to "reduce the loss of life and economic losses from tornadoes through the development and extension of accurate, effective, and timely tornado forecasts, predictions, and warnings, including the prediction of tornadoes beyond one hour in advance (Public Law 115-25)." This work addresses NOAA's 5-year Research and Development Vision Areas (2020-2026) Section 1.4 (FACETs). This effort also advances the NWS Strategic Plan (2019-2022) "Transformative Impact-Based Decision Support Services (IDSS) and Research to Operations and Operations to Research (R2O/O2R). The Brief Vulnerability Overview Tool (BVOT) would contribute to the NWS Weather Ready Nation (WRN)

Roadmap (2013) Sections 1.1.1, 1.1.2, 1.1.3, 1.1.8, and 3.1.4. In addition, because the BVOT is “hazard agnostic” — it is used to collect vulnerabilities based on different weather hazards and can be organized to display those vulnerabilities only related to those specific hazards that are relevant to an NWS WFO at any given moment — it can be seen to help advance a number of hazard-specific congressional laws including (but, not limited to) those related to tsunamis (Public Law 109-424 Sec. 5.b.4, 5.c.2, 5.c.3, Sec. 6; Public Law 115-25 Sec. 505.c.5.B and Sec. 505.d.1) and the recently introduced TORNADO Act (S.3817 Sec. 3.b.6.C).

2. Indicate how, by whom, and for what purpose the information is to be used. Except for a new collection, indicate the actual use the agency has made of the information received from the current collection.

The study uses several methods. First, a series of background interviews that take ~90 minutes will be conducted virtually using a video conferencing platform (either Zoom or Google Meets). These will be audio recorded only and will focus on professional background and perceptions of critical decision-making practices related to hazardous weather information and understandings of local vulnerabilities. We expect to only conduct background interviews with a sample of the EMs who are participating in the study.

Next, a Trust and Relationship survey will be administered through an online, Qualtrics survey platform and will be administered at the start of the study and at the end of the study to assess the impact of NWS meteorologists and EMs working together on vulnerability mapping. These surveys each take about 15 minutes to complete.

There will be an online Focus Group conducted after the BVOT has been built to get feedback about how both NWS meteorologists and EMs perceive the process of building the BVOT, how it could and should be used in the future, and what has been helpful about the BVOT. This focus group will be about 1 hour.

Finally, Vulnerability Mapping itself will involve using Google Earth Pro or ArcGIS Online to map local, known, discrete, weather hazard-related vulnerabilities in one’s area of responsibility (for the EMs, this is usually at the county level). EM participants are encouraged to limit their time doing this mapping to no more than 60 minutes in order to ensure that they only focus on those vulnerabilities of greatest concern.

The creation of a BVOT provides a number of benefits over and above current efforts within the NWS. These include 1) improved situational awareness for NWS WFO meteorologists; 2) improved spatial awareness of vulnerabilities of greatest concerns to core partners, which can prompt and fine-tune messaging and Impact Decisional Support Services (IDSS) provided to these core partners; 3) improved spatial situational awareness for backup offices if an NWS WFO loses its capacity to operate; 4) improved training and orientation for meteorologists who are new to a WFO; 5) a structured requirement for maintaining an evolving, “living” database of vulnerabilities that can be shared and equally accessed across the WFO and the NWS; and 6) opportunities to improve the trust, communication, and rapport between an NWS WFO and its core partners through the collaborative construction and periodic updating of the BVOT.

3. Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical, or other technological collection techniques or other forms

of information technology, e.g. permitting electronic submission of responses, and the basis for the decision for adopting this means of collection. Also, describe any consideration of using information technology to reduce burden.

Data collection for the BVOT is currently conducted using open-source mapping software — specifically, through the use of Google Earth — permitting the electronic submission of all data. Participants are asked to create a Google Earth “project” (either using the online or the free desktop version of Google Earth), drop points/draw polygons of specific vulnerabilities, annotate those points/polygons to indicate the weather hazard of concern and provide a brief description of the vulnerability, and then export that “project” as a .kml file. Those files can easily be combined into a single shapefile that can then be used either in AWIPS-II or an external situational awareness display platform (e.g., Google Earth or GR2).

4. Describe efforts to identify duplication. Show specifically why any similar information already available cannot be used or modified for use for the purposes described in Question 2

There is no similar information already available in the NWS compared to what is being collected by the BVOT. The closest example in the NWS would be the Impacts Catalog — however, the Impacts Catalog is designed for specific, often temporary, Decision Support Service needs (e.g., a local festival, a fishing tournament, or some other outdoor event) and is not designed to collect enduring vulnerabilities that are of central concern to an NWS WFO’s core partners.

5. If the collection of information impacts small businesses or other small entities, describe any methods used to minimize burden.

The collection of the vulnerability data will not impact small businesses or other small entities. It will involve effort from core partners to provide vulnerability data, but this is generally part of their normal duties. Regardless, the effort to test out the methods for collecting vulnerability data in as efficient a process as possible is focused on minimizing even the limited burden (i.e., 1 or 2 hours each year) that would be part of contributing to the BVOT.

6. Describe the consequence to Federal program or policy activities if the collection is not conducted or is conducted less frequently, as well as any technical or legal obstacles to reducing burden.

If these data are not collected, NWS will continue to be hampered in its efforts to identify vulnerable populations. Without the ability to identify vulnerable populations, the NWS will be unable to meet its directive under Public Law 115-25 Sec 406.c.2.B to improve the system for issuing watches and warnings using a process that “accounts for the needs of various demographics, vulnerable populations, and geographic regions.”

7. Explain any special circumstances that would cause an information collection to be conducted in a manner inconsistent with OMB guidelines.

This information collection will be conducted in a manner consistent with OMB guidelines.

- 8. If applicable, provide a copy and identify the date and page number of publications in the Federal Register of the agency's notice, required by 5 CFR 1320.8 (d), soliciting comments on the information collection prior to submission to OMB. Summarize public comments received in response to that notice and describe actions taken by the agency in response to these comments. Specifically address comments received on cost and hour burden.**

A Federal Register Notice published on June 17, 2022 (87 FR 36465) solicited public comments. No comments were received.

- 9. Explain any decision to provide any payment or gift to respondents, other than remuneration of contractors or grantees.**

Respondents will not receive any payment or remuneration.

- 10. Describe any assurance of confidentiality provided to respondents and the basis for the assurance in statute, regulation, or agency policy. If the collection requires a systems of records notice (SORN) or privacy impact assessment (PIA), those should be cited and described here.**

There are two different types of data being collected in this project and issues of confidentiality are treated differently for these types of data.

1) The research team will assist the participating NWS WFOs to determine how to communicate with their core partners about collecting vulnerability data used to populate their WFO's BVOT. This process does not involve collecting PII since it is only asking respondents to provide publicly GIS shapefiles of vulnerability locations that can be combined to create a usable BVOT shapefile for the WFO. There are no assurances of confidentiality in this portion of the study because these data are publicly available and are not personal information.

2) The other type of data being collected is information collected by the research team that will be used to apply social scientific principles to assess the impact and success of the process of creating a BVOT. As noted elsewhere, this research is not simply about creating a BVOT, but is also focused on understanding the process of creating a BVOT (i.e., the interaction between the NWS WFO and its core partners focused on identifying vulnerabilities that will be helpful for the WFO to improve its messaging and Decision Support Services (DSS) to those partners during hazardous weather events). As such, the research team will recruit and go through an IRB-approved process of receiving informed consent from all of the participants in the BVOT-creation process (i.e., the NWS WFO meteorologists and their core partners in the four study WFOs). This informed consent will provide confidentiality regarding a) background interviews with study participants, b) the pre-/post-NWS-Core Partner Trust survey, and c) any debriefing or follow-up interviews conducted to assess the effectiveness of the BVOT. Confidentiality will be assured through IRB-approved data security measures, ensuring that interviews are conducted in private, and the de-identification of reported data/results.

- 11. Provide additional justification for any questions of a sensitive nature, such as sexual behavior or attitudes, religious beliefs, and other matters that are commonly considered private. This justification should include the reasons why the agency considers the questions necessary, the specific uses to be made of the information, the explanation to be given to persons from whom**

the information is requested, and any steps to be taken to obtain their consent.

No sensitive questions as described in the PRA guidance will be included in this study's data collection.

12. Provide estimates of the hour burden of the collection of information.

Wages based on <https://www.bls.gov/bls/blswage.htm> (accessed March 25, 2022).

EM mean hourly wages based on Occupation Code 11-9161 (emergency management director) @\$40.53/hour.

Information Collection	Type of Respondent (e.g., Occupational Title)	# of Respondents/year (a)	Annual # of Responses / Respondent (b)	Total # of Annual Responses (c) = (a) x (b)	Burden Hrs / Response (d)	Total Annual Burden Hrs (e) = (c) x (d)	Hourly Wage Rate (for Type of Respondent) (f)	Total Annual Wage Burden Costs (g) = (e) x (f)
BVOT Vulnerability Mapping	Emergency Managers	45	1	45	1 hour	45	\$40.53	\$1,823.85
Background interview	Emergency Managers	35	1	35	1.5 hours	52.5	\$40.53	\$2,127.83
Pre-/Post- Online Trust Survey	Emergency Managers	45	2	90	.25 hours	22.5	\$40.53	\$911.93
Totals				170		121		\$4,863.61

13. Provide an estimate for the total annual cost burden to respondents or record keepers resulting from the collection of information. (Do not include the cost of any hour burden already reflected on the burden worksheet).

There are no capital/start-up or ongoing operation/maintenance costs associated with this information collection.

14. Provide estimates of annualized cost to the Federal government. Also, provide a description of the method used to estimate cost, which should include quantification of hours, operational expenses (such as equipment, overhead, printing, and support staff), and any other expense that would not have been incurred without this collection of information.

Cost Descriptions	Grade/Step	Loaded Salary /Cost	% of Effort	Fringe (if Applicable)	Total Cost to Government
Federal Oversight	ZP-4	\$230,708	1%		\$2,307.08
Meteorologists	ZP-3 (40)	\$154,764	1% (40)		\$61,805.06
Contractor Cost		\$200,000	100%		\$200,000.00
Travel					
Other Costs:					
TOTAL					\$264,112.14

There are no annualized costs associated with this research project.

15. Explain the reasons for any program changes or adjustments reported in ROCIS.

This is a request for a new data collection of this information.

16. For collections of information whose results will be published, outline plans for tabulation and publication. Address any complex analytical techniques that will be used. Provide the time schedule for the entire project, including beginning and ending dates of the collection of information, completion of report, publication dates, and other actions.

The Trust survey results will not be published in a raw format, but will be used to assess the impact of the process of building and populating a BVOT on the trust and communication between NWS WFOs and their core partners. As such, these results will only be published as aggregated data.

Data collected from interviews and focus groups will be published following analyses as part of a broader assessment of the viability of implementing BVOT-related methods for collecting and operationalizing knowledge-derived vulnerability data in NWS WFOs.

Research results regarding the development of BVOT-related methods will be shared both internally (with NOAA/NWS) in order to assist with the transition from Research to Operations, as well as externally through peer reviewed journals and scholarly conference proceedings.

17. If seeking approval to not display the expiration date for OMB approval of the information collection, explain the reasons that display would be inappropriate.

The expiration date for OMB approval of the information collection will be displayed on all instruments.

18. Explain each exception to the certification statement identified in “Certification for Paperwork Reduction Act Submissions.”

The agency certifies compliance with [5 CFR 1320.9](#) and the related provisions of [5 CFR 1320.8\(b\)\(3\)](#).