



# Office of Homeland Security Statistics

---

U.S. Department of Homeland Security

## OHSS Website Technical Proposal

Ryan Johnson and Shannon McHarg  
OHSS web team

December 2024

# Executive Summary

Our current website technology stack doesn't support OHSS's ability to meet the regulatory requirements of a Recognized Statistical Agency or Unit. As it stands, we must rely on OIT in a way that restricts OHSS control over the content, timing, and functionality of our statistical products. Our last two releases were delayed by nearly a month. This has resulted in us not being able to release key features (for example, the Key Homeland Security Metrics—KHSM visualizations) in a timely way. In advance of our application to OMB for formal recognition as a RSAU, it's critical that OHSS establishes a track record of releasing timely, useful statistical products that adhere to the public schedule of releases.

Because of this and many other challenges with the current state outlined in this document, we recommend moving to a **static site hosted on cloud.gov Pages**.

## Findings

### A. Introduction

The Office of Homeland Security Statistics made significant progress in FY 2024 toward its [core goals](#), particularly toward the goal of meeting the requirements of Recognized Statistical Agency or Unit (RSAU) in order to support an application to OMB for recognition.

With respect to the OHSS website, we believe we have more to do to meet the [Fundamental Responsibilities of Recognized Statistical Agencies and Units](#). The current technical implementation of the OHSS website limits our ability to meet some of the requirements of a RSAU, specifically the required capacity to directly update the content, functionality, appearance, and layout of our website [\[source\]](#).

Our goal with this memo is to support the office in identifying and addressing gaps in OHSS's ability to meet the requirements of a recognized statistical agency.

### B. Current Technical State

#### Codebase

- The OHSS website is currently in a Drupal 10 codebase, supported by a contractor (Elevation). This contract will expire May 2025.

- OIT, which manages deployments and hosting of DHS websites, is requiring an upgrade to Drupal 11 by August 2025.
- The OHSS web team can update text, publish reports, and build new basic content pages via the Drupal content management system, but more complex updates (such as building and updating data visualizations or updating the [U.S. Web Design System](#)) require custom coding by the contractor and a deployment by OIT.

## Deployment and Hosting

- The OHSS website (along with DHS.gov and other DHS Drupal websites) is hosted and deployed by OIT. In order to make certain updates to the OHSS website (including releasing new code, such as data visualizations), the OHSS web team coordinates with the contractor (Elevation) and OIT to schedule a deployment. **It can take up to a month—sometimes longer—to deploy new code, depending on OIT’s deployment schedule.**
- Drupal, like all database-driven content management systems, requires significant caching to make the website performant. Caching essentially creates a static version of the website to make it load more quickly for users. **For website updates to “go live”, the website cache must be cleared.** There are at least two layers of caching with the OHSS Drupal website: Drupal caching and the Akamai Content Delivery Network (CDN). The OHSS web team can clear the latter, but the contractor must clear the Drupal cache. Some updates, including updates to the [monthly tables data visualizations](#), **require the contractor to clear the Drupal cache for the updates to appear on the website.**
- We at OHSS have no way to reliably test and preview designs without the risk of losing our works-in-progress. The contractor has multiple code environments ([Testint](#); [Staging](#); [Production](#); along with an internal dev environment, to which we don’t have access). Content doesn’t pass from any lower environment into Production, so we have to redo work if we put something in Staging for stakeholder review. After releases, Production data is brought into Staging and Testint, wiping out anything we’ve been working on in Staging. **Consequently, we can’t reliably share our designs to gather feedback without the risk of having that work deleted upon production deployment**, as happened when drafting content in the early stages of development for Key Homeland Security Metrics (then called Department of Homeland Security Indicators).<sup>1</sup>

---

<sup>1</sup> This is a consequence of content residing in a database. When OIT and the contractor release new code, the content in the production database replaces the content in the “lower” environments of testint and staging. As a result, content that only resides in the latter environments is erased. But the only way to share content for subject-matter-expert review is to use a “lower environment”. As a result, we must duplicate our efforts to convert works-in-progress to working website code, or risk losing it entirely.

## C. Fundamental Responsibilities of Recognized Statistical Agencies and Units

- [The Fundamental Responsibilities of Recognized Statistical Agencies and Units Rule](#) emphasizes **scheduling and timeliness** for publishing statistical products on the agency's website.
  - *"Each Recognized Statistical Agency or Unit must publicly announce and adhere to a schedule for the release of statistical products."* [source](#)
  - *"Timeliness or timely refers to the dissemination of statistical products and information at their scheduled release time or, in instances where there is no scheduled release time, the dissemination of statistical products or information as close to the event being measured as possible."* [source](#)
- The rule specifies requirements for "Websites and branding," including (but not limited to) the following:

*"Each parent agency head must ensure its Recognized Statistical Agency or Unit has:*

- (1) Sufficient resources to develop and maintain its website required under paragraph (e) of this section;*
- (2) The necessary authority and autonomy to determine the content, functionality, appearance, and layout of its website required under paragraph (e) of this section; and*
- (3) The capacity to directly update the content, functionality, appearance, and layout of the website required under paragraph (e) of this section without reliance on any parent agency official unless the official is directly assigned to the Recognized Statistical Agency or Unit."* [source](#)

Given its current technical posture, the OHSS website does not (and is unlikely to) meet these requirements. Because of the technical dependencies related to OIT's deployment schedule, mandates, and constraints, along with multiple contractor dependencies, the OHSS website doesn't currently support the autonomy specified in these requirements.

Furthermore, because OHSS is reliant on both the contractor and the parent agency (via OIT/OCIO) when releasing many of the office's core statistical products, we are unlikely to be able to adhere to an advanced release schedule as mandated by the rule. Assuming we can establish and adhere to a release schedule with OIT, we would still be reliant on OIT and/or a contractor for clearing cache, remediating errors, and general

technical maintenance, all of which would impact our ability to consistently meet our own publishing schedule requirement.<sup>2</sup>

## D. Proposed Technical Alternative

Our proposed technical alternative is intended to promote *timeliness*, *predictability*, and *autonomy* to align with the requirements of a RSAU.

### 1. Migrate the website from Drupal to a static-site generator.

A database-driven content management system (such as Drupal) is advantageous under the following circumstances:

- The website has a large volume of content (e.g., tens of thousands of content assets).
- The website has a large volume of content managers (a dozen or more).

In our view, the OHSS website has neither the volume of content<sup>3</sup> nor the number of content managers<sup>4</sup> to justify the trade-offs associated with the use of Drupal (or any other database-driven content management system). Furthermore, many of the aforementioned dependencies (namely, OIT and the contractor) are specifically related to the use of Drupal.

We propose migrating the website to a static-site generator. There are several examples in the federal government of moving from Drupal to a static-site generator, including [ADA.gov](#) ([codebase](#)) and [GSA SmartPay](#).([codebase](#)).

Because of the advantages of using a static-site generator for appropriate websites, [OMB M-23-22](#) includes among its guidance the following:

***Default to static websites:*** *Where a website or digital service does not require a dynamic back-end service to provide necessary functionality, agencies should prefer “static” website architectures. Static website architectures are designed to serve static files at specified URLs, rather than dynamically executing code to assemble content on a web request. Since static sites do not execute server-side code, their attack surface is dramatically smaller than dynamic applications. In addition, static*

---

<sup>2</sup> For example, if we found a data error following a scheduled release, we may need to wait for the *next* OIT-scheduled release to fix the error, which could be several weeks later.

<sup>3</sup> The OHSS website has approximately 1,150 content assets, with fewer than 400 content pages. The latter number is more important, since it represents the amount of content that needs to be “built” during static-site generation.

<sup>4</sup> Just three OHSS staff currently update content via the Drupal content management system.

*websites are generally much more cost-effective to operate than dynamic applications and load faster for users, especially those with low-bandwidth internet.*

A static-site generator would also enable the web team to autonomously update—not just the content—but also metadata, styling, USWDS patterns, and a host of other aspects of the website for which we currently rely on the contractor.<sup>5</sup>

**Crucially, this approach would also allow us to autonomously publish new content and data whenever we need to, as opposed to relying on OIT’s deployment schedule.** We would also eliminate our reliance on the contractor for clearing cache in both Drupal and Akamai, since the purpose of caching is to generate a static version of the website to support faster website loading; the website would be static to begin with, so there’s no need for separate caching.

We have found that we can support a local development environment on our government-furnished laptops for [at least one static-site generator](#) (using Node.js), which means we could be more independent in publishing not just data and content pages, but also code, from our DHS laptops.

We also believe we could attract a larger pool of contractors with this approach, since [Drupal has been falling out of favor among developers](#) for several years.

## Comparison

	Static-site generator	Drupal
Location of raw content and data	GitHub repository	Database and filesystem
How to edit	GitHub interface; optional content management interface	Drupal interface
Infrastructure	Serverless, fully managed via GitHub and cloud.gov Pages	Multiple servers
Security	Generally more secure since user-facing content is	Need to track and remediate PHP and Drupal

---

<sup>5</sup> We have several examples of trivial changes that could be accomplished by the OHSS web team in minutes, but instead require the contractor and are not released until the next deployment several weeks later.

	static, and no website source code runs on servers in response to visitors  Security is handled by GitHub and cloud.gov Pages	vulnerabilities, as well as vulnerabilities in auxiliary components such as modules and caching
How content is delivered to visitors	The website has already been fully pre-built, so the content is simply given to the visitor as-is	Drupal pulls content from the database and templates from the filesystem, combining them to build a page. The page is then given to the visitor.

## 2. Host the website with Cloud.gov Pages (instead of through OIT).

**We do not believe we can meet the requirements to become a RSAU under our current hosting solution.** Because the OHSS website is hosted by DHS via the OCIO, it is clearly not independent of the parent agency in the way the rule states and intends. The reliance on OIT, and our inability to determine our own release schedule, does not afford us the autonomy the rule requires.

We believe we can resolve this dependency by hosting the website via [cloud.gov Pages](#).

Formerly called Federalist, cloud.gov Pages is a federally managed, static-website hosting service. Using cloud.gov Pages, we would be able to manage our own hosting and deploy website updates whenever we need to. Since cloud.gov Pages is administered through the General Services Administration (GSA), procurement of cloud.gov Pages is typically accomplished through Interagency Agreement (IAA).

In addition to autonomy and timeliness in deployments and updates, we would benefit from less downtime with the website, as we've noticed the current OHSS website occasionally fails to load.<sup>6</sup>

---

<sup>6</sup> While performing the content audit, the website would fail to load pages at least once per day, often more. We were unable to determine what conditions contributed to the website failing to load.

We believe this approach further supports the goals of OHSS, since cloud.gov Pages websites are commonly deployed from open-source code in public code repositories.

### **3. Ensure we are using open source products and a public repository.**

The [Federal Source Code Policy](#) states: “Regardless of the specific solution selected, all software procurements and Government software development projects should consider utilizing open standards whenever practicable in order to increase the interoperability of all Government software solutions. Open standards enable software to be used by anyone at any time, and can spur innovation and growth regardless of the technology used for implementation—be it proprietary, mixed source, or OSS in nature.”<sup>7</sup>

Open-source code in a publicly available code repository supports the larger efforts of data transparency—along with other obligations, such as the Freedom of Information Act (FOIA)—by automatically registering every change to the website in a manner that is immediately available to anyone who wants to review it. As a result, we would no longer require a separate process for documenting changes to the website...the changes are built in and recorded.<sup>8</sup>

## **E. Resource Requirements**

*(f) Websites and branding support. Each parent agency head must ensure its Recognized Statistical Agency or Unit has:*

*(1) Sufficient resources to develop and maintain its website required under paragraph (e) of this section; [source](#)*

Over the long term, we expect our proposed approach will yield at least moderate cost avoidance, as increased autonomy within OHSS will likely result in less dependence on costly contractor support.

Here are the resources we anticipate needing in the **short term**:

### **1. Current web team at OHSS**

Outside of the existing contract for the website (expiring 5/2025), there is very little day-to-day support for the website. We don’t expect a successful

---

<sup>7</sup> In this context, “OSS” refers to “Open Source Software”.

<sup>8</sup> All changes to the “production” website, which is the live website on the internet, are capture in “pull requests” in a public repository. [Here’s an example of “merged” pull requests from GSA SmartPay](#). These are changes that went live on the website, recorded for anyone to review. It’s a record of changes to the website that writes itself in real time.



implementation of this proposal should we no longer have the current OHSS web team members.

**2. Engineering support to migrate the website from Drupal to a static-site generator**

This initial engineering support is critical, and could be in the form of a detail, short-term contractor, or staff recruitment. We expect this initial migration to take approximately six months, assuming we are able to leverage the code developed by the existing contractor. For this interim phase, ideally we can identify engineering support with Drupal skills (in addition to static-site engineering) to keep the current website running in the absence of the current contract support.

**3. Cloud.gov Pages agreement**

This agreement would replace the existing allocation to OIT for website hosting. It's likely this will cost slightly more than our current agreement, and we'll likely lose some services (e.g., SiteImprove) as a result, but we believe it's the best option to meet the necessary independence requirements stated earlier.

**Longer term**, to support autonomy as a RSAU, we propose the following roles as OHSS staff dedicated to the website:

Product Manager	1 FTE	Vacant <sup>9</sup>
User Experience Designer	1 FTE	Filled
Content Designer	1 FTE	Filled
Engineer	1 FTE	Vacant <sup>10</sup>
Subject-matter data expert	0.5 FTE	Filled <sup>11</sup>

---

<sup>9</sup> Previously occupied

<sup>10</sup> Currently contractor supported

<sup>11</sup> This role is indispensable as liaison between the specialized group working on the website, and the larger effort of analyzing and compiling statistics at OHSS. This is a full-time role, but split between website reporting and working with the statisticians and other subject-matter experts in the office. This table acknowledges only the time dedicated to the website, as captured in the FTE allocation to the website role.