Sustainable Procurement

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Sustainable Procurement: Timeline for Key Research and Technology Milestones

Treasury has established implementing climate change and sustainable procurement as a Departmental priority. Here is a summary of agency research and technology efforts design to support sustainable procurement.

December 2021

- Clause Tool automation enhanced to review requirements documents against Sustainable Procurement lists.

March 2023

- Discussions with leading sustainable procurement researchers culminating in Treasury-wide webinar on Promoting Sustainable Public Procurement.

October 2023

- Research paper on Implementation of Environmentally Sustainable Procurement Policies (pending publication).

Treasury/OCPO/ART Org Structure

Treasury, Office of the Procurement Executive

IRS, Office of the Chief Procurement Officer

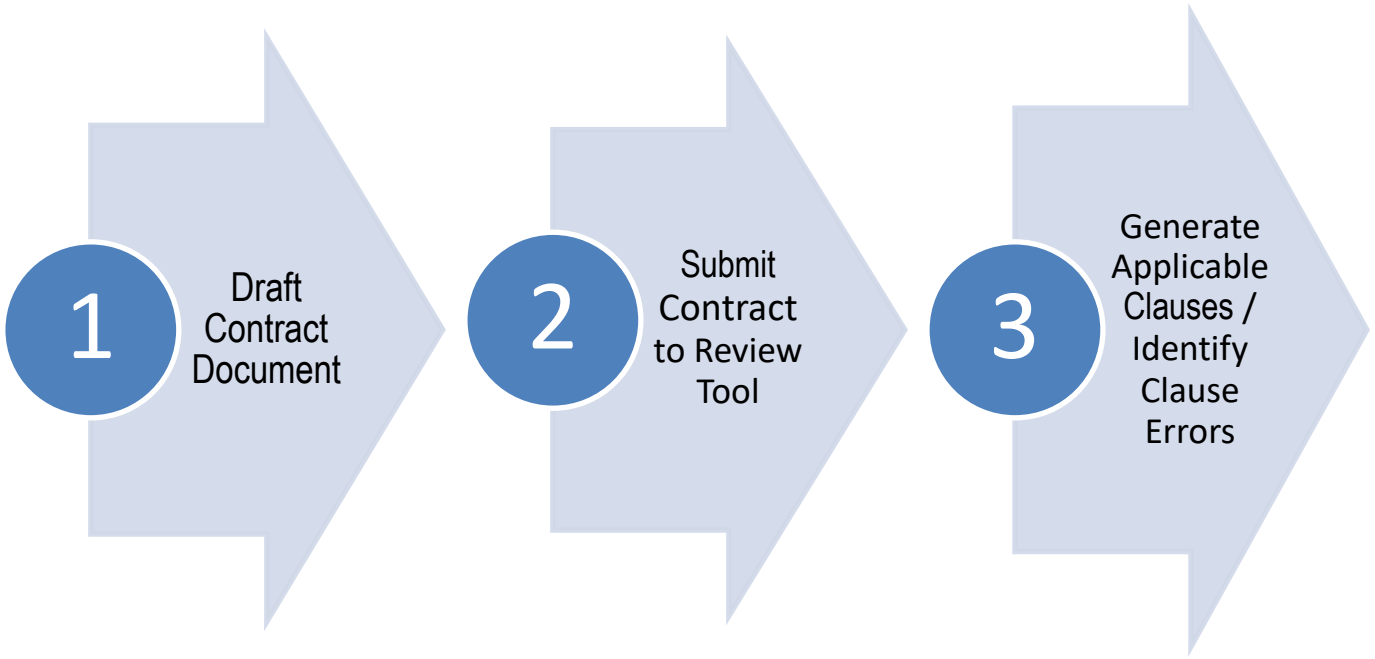
Analytics, Research, and Technology Division

ART Division specializes in analytics, research, and technology for federal procurement.

Right: Example visualization of procurement data from ART division.

Clause Tool Workflow

- Software can examine language found in contract documents and instantly provide a report identifying missing contract clauses or other errors. The Contract Clause Review Tool uses a time-saving, innovative approach that helps Contracting Officers in understanding and implementing a myriad a complex acquisition regulations.



"[T]he sections of [FAR] Part 23 represent a divergent smattering of interests. Most are related to sustainability goals, and many derive their authority from previously enacted executive orders and legislation, but taken together, they are a confusing maze of requirements likely to overwhelm procurement officials and prospective contractors alike (Thornton, 2022)."

Checks for Ten Clauses Added in December 2021

1. (NEW) 52.223-1 Biobased Product Certification
2. (NEW) 52.223-2 Affirmative Procurement of Biobased Products Under Service and Construction Contracts
3. (NEW) 52.223-4 Recovered Material Certification
4. (NEW) 52.223-9 Estimate of Percentage of Recovered Material Content for EPA-Designated Items
5. (NEW) 52.223-13 Acquisition of Epeat-Registered Imaging Equipment
6. (NEW) 52.223-14 Acquisition of Epeat-Registered Televisions
7. (NEW) 52.223-15 Energy Efficiency in Energy-Consuming Products
8. (NEW) 52.223-16 Acquisition of Epeat-Registered Personal Computer Products
9. 52.223-17 Affirmative Procurement of EPA-Designated Items in Service and Construction Contracts
10. (NEW) 52.223-22 Public Disclosure of Greenhouse Gas Emissions and Reduction Goals – Representation

Note: Automation checks FAR each evening for new or updated clauses.

Deep Dive on FAR 52.223-22 Emissions Disclosure Clause

- A software enhancement implemented in December 2021 started notifying Contracting Officers when the mandatory emissions disclosure clause is missing. 49% of inspected documents correctly included the clause. In contrast, 46% of inspected documents did not include the clause when required. 348 reminders were provided to insert the emissions clause.

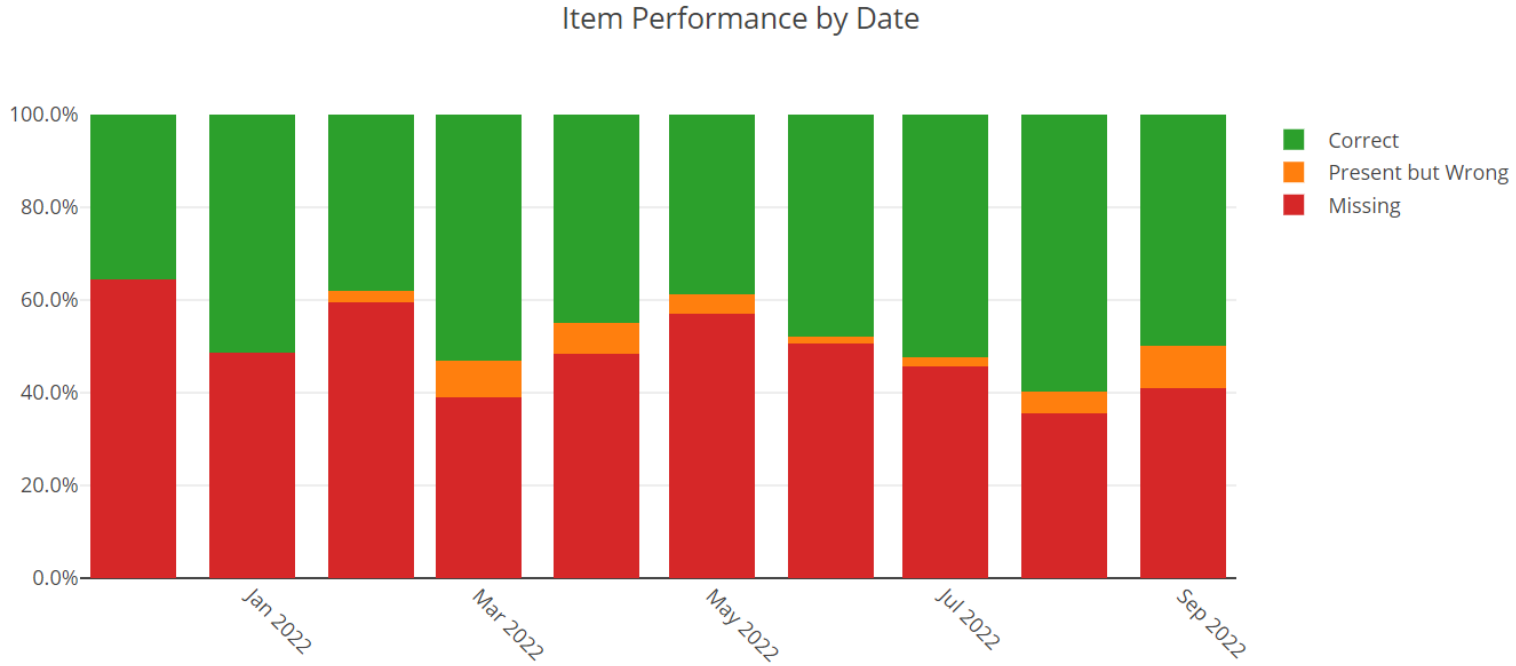
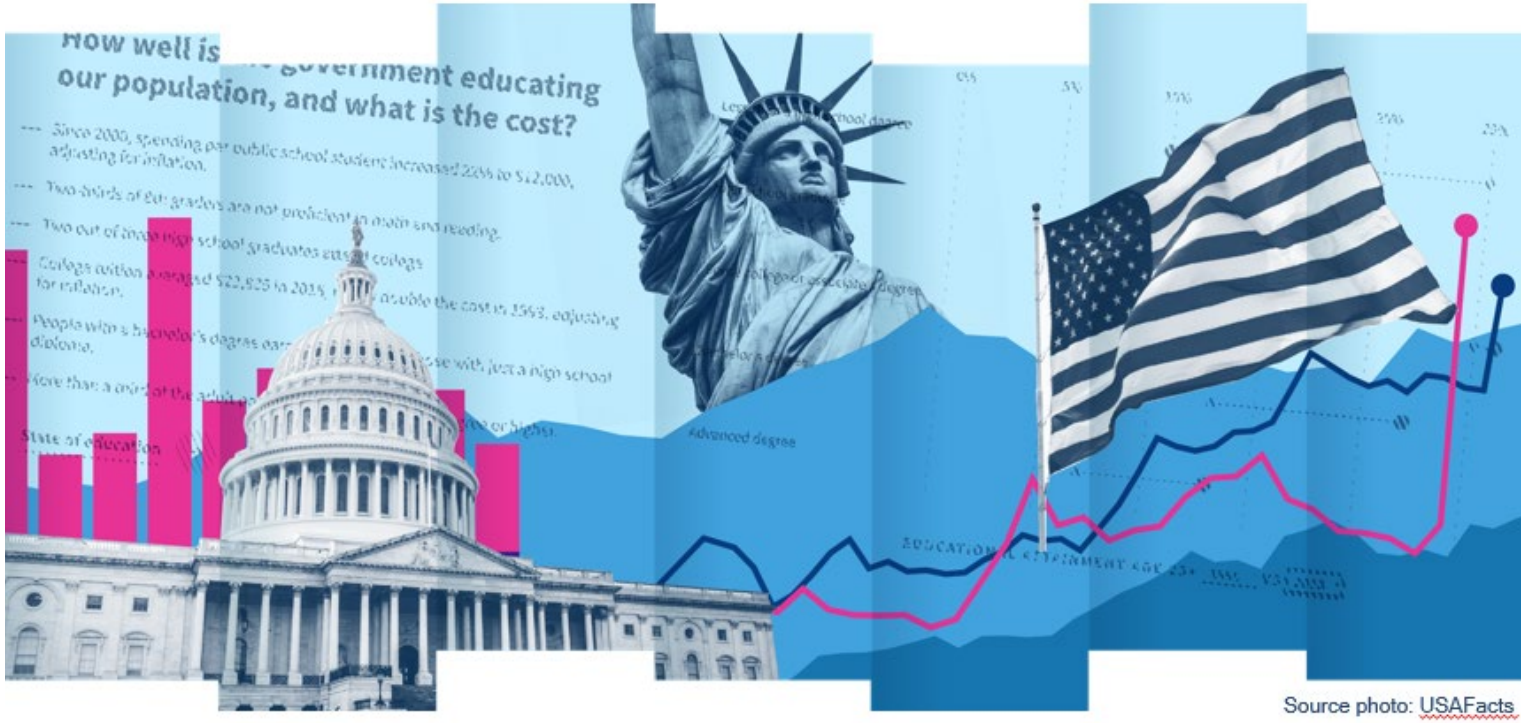


Chart contains metrics on reminders from intelligent Clause Tool which are increasing awareness and inclusion of sustainability requirements in Treasury contracts.

Engagement with Academic Research

- Reviewed academic research on sustainable procurement.
- Held Treasury-wide webinar, in March, to educate workforce on sustainable procurement.
- Collaborated with another agency to produce a research paper.



Using Law and Economics to Achieve Sustainability and Equity in Government Contracting

Désirée Klingler

Yale Law School

IRS Training, March 6, 2023

Research Paper

- Interagency collaboration to produce research paper on sustainable procurement with a focus on technology and data analytics for the acquisition workforce.

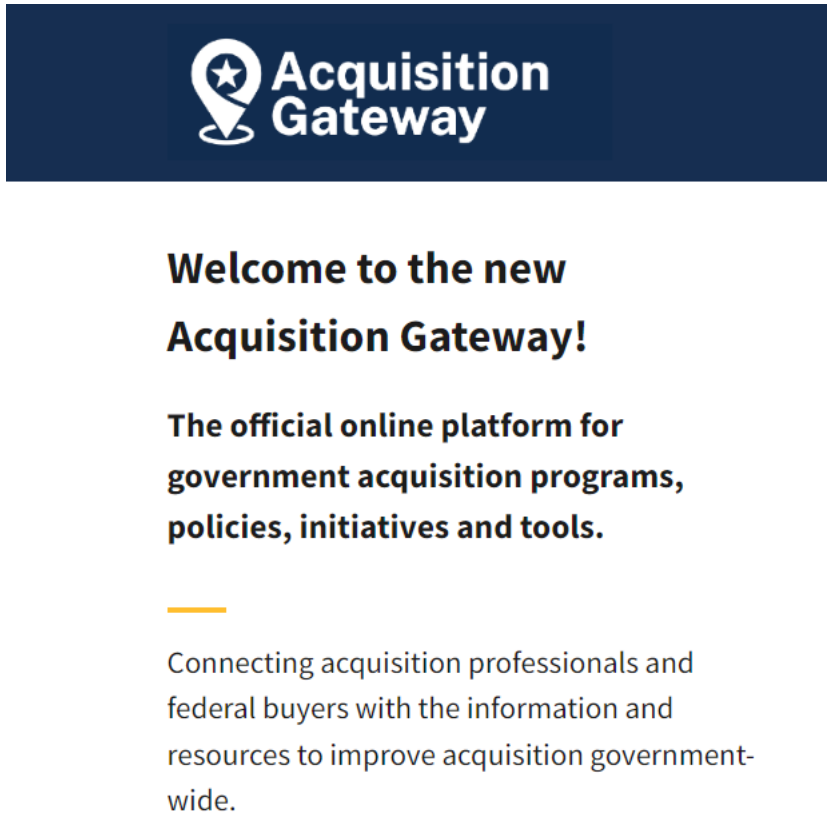
- Authors of the paper are David Gill from Treasury's Procurement Analytics, Research, and Technology and Captain Leo Angelo Gumapas, Environmental Engineering Program Chief at the Department of Health and Human Services.

- Goals of the research collaboration were to:
    1. Review existing research and analyze federal data on sustainable procurement.
    2. Synthesize findings on sustainable procurement and survey available procurement technology for use by practitioners in the acquisition workforce.

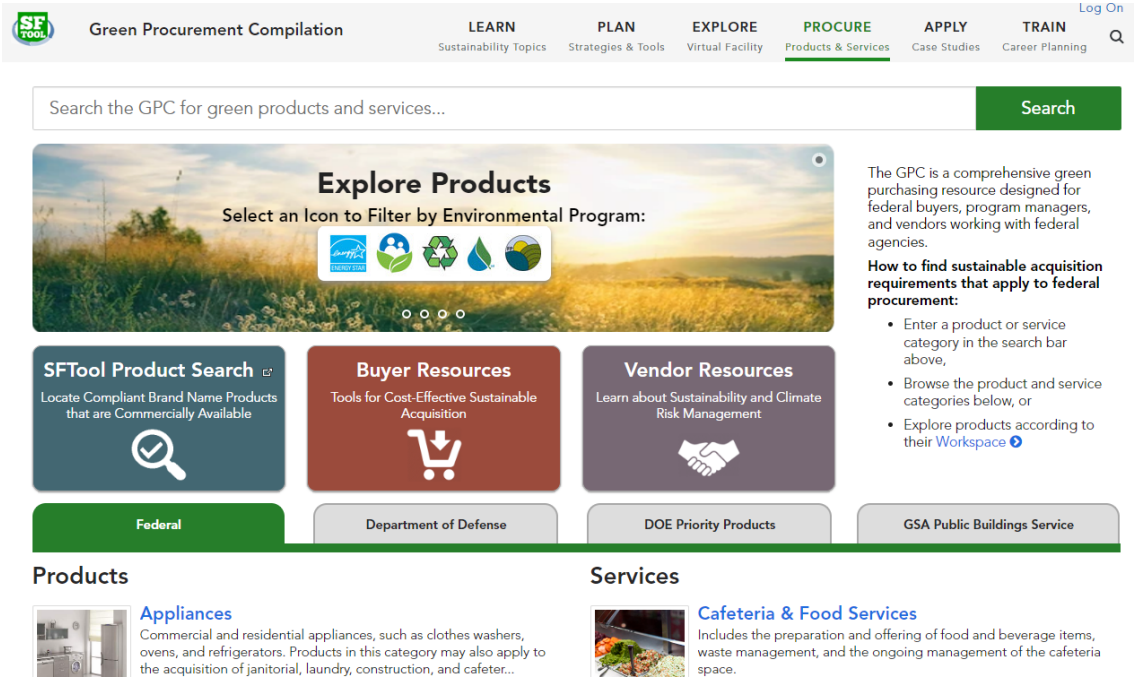
Combining Sustainability & Acquisition Websites

- Consider increasing the prominence and integration of sustainability on federal websites frequently accessed by the acquisition workforce.

Major Portal for Acquisition Workforce



Sustainability Information Siloed on Separate Website



How Can Agencies Validate FPDS Contract Sustainability Reporting?

Problem: Many contracting agencies lack deep expertise in sustainable procurement programs such as EPEAT, BioPreferred, SNAP, Recovered Materials, and Energy Star. These agencies struggle to understand which sustainability requirements should be applied to specific procurement.

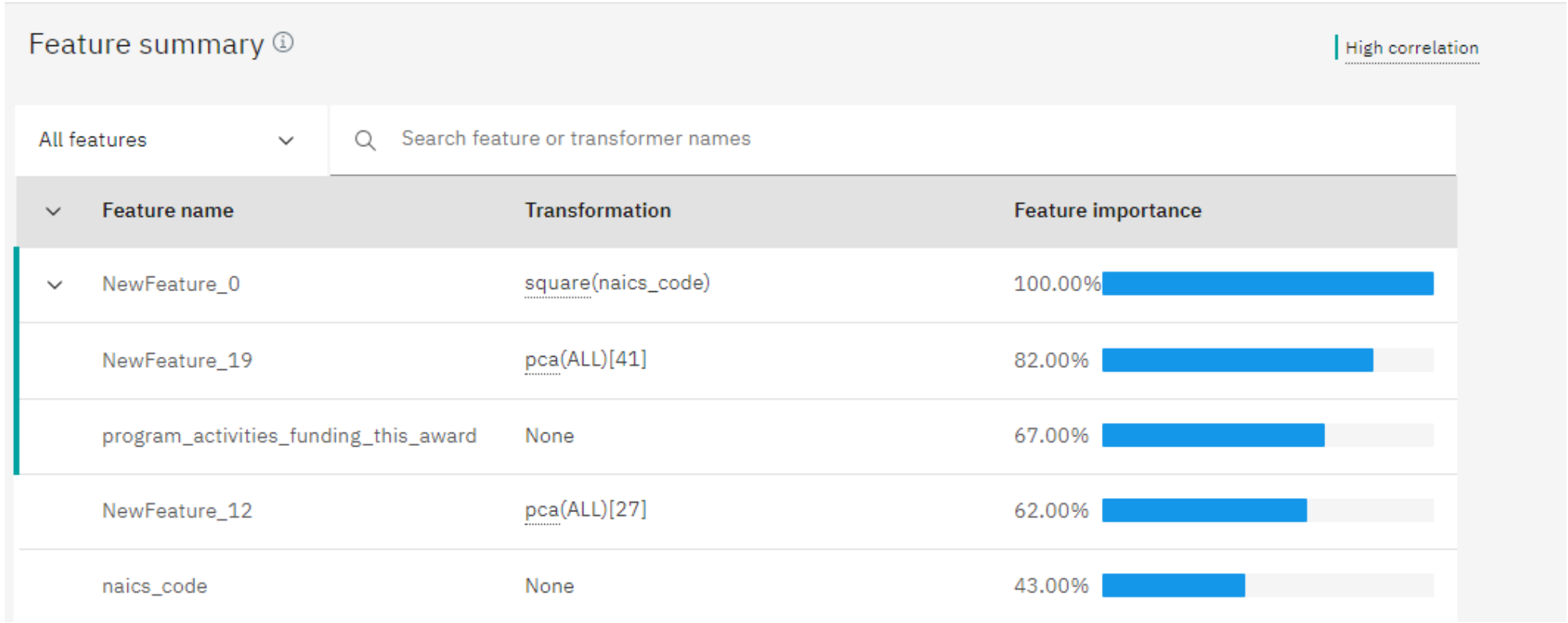
Discussion: Finding reliable ground truth data is critical when assessing compliance rates for sustainable procurement programs. A machine learning model trained on a large volume of incorrect data would generate many incorrect sustainability coding recommendations. FPDS contact action records are often miscoded when it comes to data elements such as PSC codes and sustainability.

Solution: Auto machine learning software was used to develop model that analyzes contract descriptions and assesses the likelihood of errors in selecting product or service codes and sustainability requirements. Textual descriptions of requirement data from GSA's FPDS system were transformed using text feature engineering and principal component analysis (PCA) in our model.

How Can Agencies Validate FPDS Contract Sustainability Reporting?

Screenshot showing how data from FPDS.gov and USASpending.gov was transformed for use by a machine learning model that validations product or service code selection and sustainable coding for individual contracts.

Rank	RMSE (Optimized)	Algorithm	Enhancements
1	1.469 (Holdout)	Snap Random Forest Regressor	TFE HPO-1 +1



Results from Sustainability Data Validation

Below are results of running the contract sustainability validation model on a sample of contracts from various federal agencies. The model has the potential to help agencies locate opportunities to improve sustainability in an automated fashion.

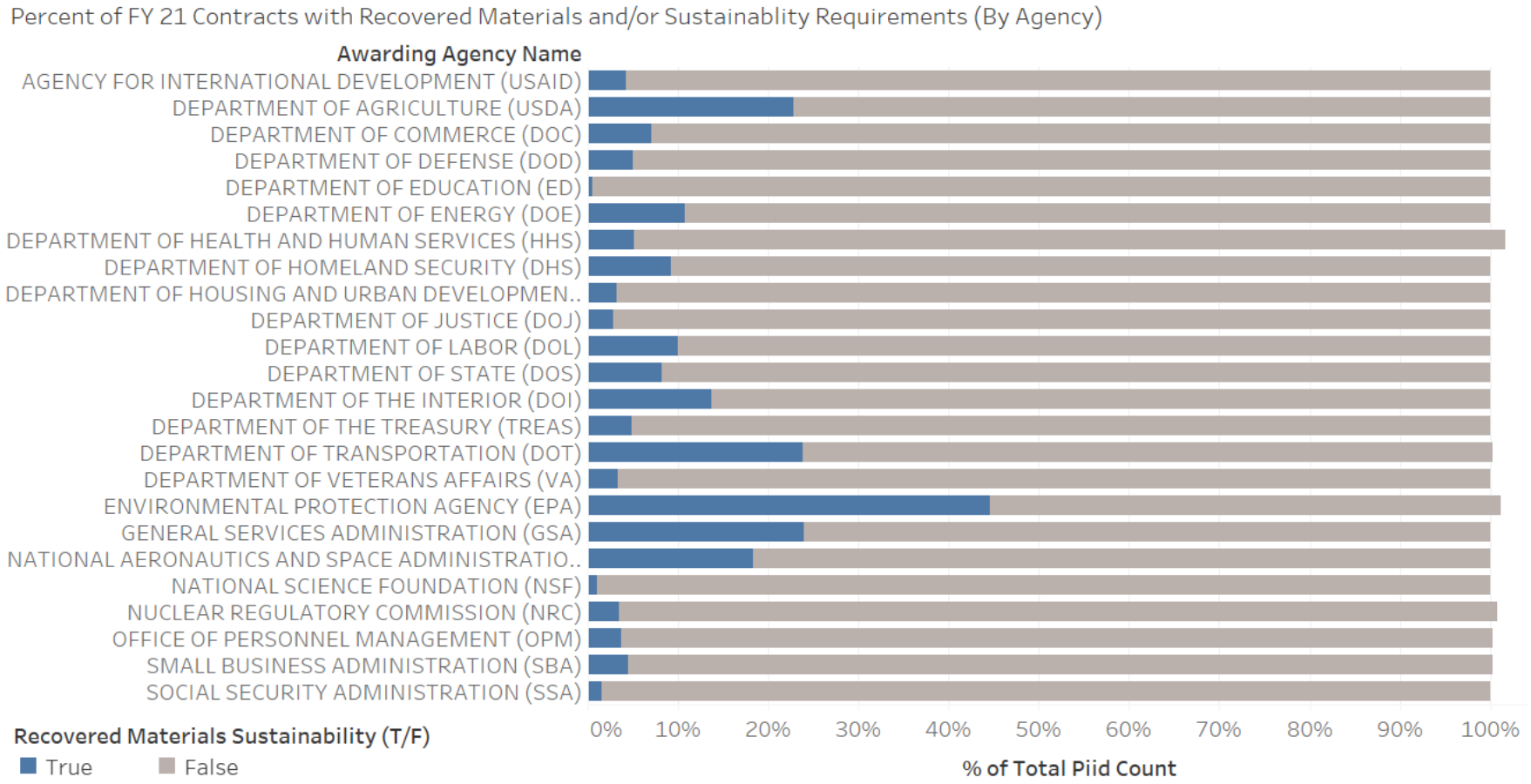
Description	Number of Contracts	Percentage
Total Number of Contracts in Dataset	365,189	100%
Model Agrees with Contracting Officer PSC Level 2 Code Selection (Difference less than 1)	333,497 contracts	91%
Model Disagrees with Contracting Officer PSC Level 2 Code Selection (Difference of 1 or greater)	31,999 contracts	9% (note: where there is disagreement, we recommend manual review as model recommendations appear to be less reliable with this population)

Example of miscoding detected by the contract sustainability data validation model. Misclassifying IT hardware as an office product could lead to overlooking the opportunity to purchase the most energy efficient IT hardware.

PSC Level 2 Category	Level 2 Code	Transaction Description	Comments
Office Management Products	6.10	DELIVERY ORDER ESTABLISHED TO ORDER 19 IPAD MINIS WITH EXTENDED SERVICE AND SIM CARDS FOR NRCS EASEMENTS STAFF.	Level 2 Category 1.5: Information Technology and Telecommunications — End User should have been selected Energy consuming information technology hardware should not be miscoded as office management products.

Sustainable Procurement Scorecard

- Consider creating Sustainable Procurement Scorecard (e.g. similar to GSA's category management dashboards).



Left: Notional Sustainable Procurement Scorecard presented by David Gill at the 2022 Federal Environmental Symposium.

Summary of Recommendations

- Increase prominence and promote sustainability on federal websites frequently accessed by the acquisition workforce.
- Product or Service Code validation service powered by machine learning. Verify that a reasonable PSC code was selected. Helps to validate whether applicable sustainability requirements were included in contract (based on type of product or services purchased)
- Create Agency Sustainable Procurement Scorecard. Create dashboard showing percentage of agency contract actions including sustainability requirements. Would support FAR 23.103 goal of including sustainability in 95% of contract actions.
- Expand use of natural language processing software (e.g. Clause Tool) that extracts product requirements from solicitation and contract documents. Applicable sustainability programs and FAR clauses are automatically identified (e.g. BioPreferred).
- Conduct green procurement audits where agencies periodically review FPDS.gov data and contract file documents for compliance with sustainable procurement policies (e.g. as part of agency FPDS data Validation and Verification reviews).