



ACQUISITION RESEARCH PROGRAM SPONSORED REPORT SERIES

The Impact of Statutory and Regulatory Imperatives to Include Energy Considerations in Acquisition Programs

28 February 2018

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Abstract

This research investigated the impact of statutory and regulatory imperatives to include energy considerations in acquisition programs. Specifically, it explores whether individual acquisition programs are implementing energy-related key performance parameters (KPPs). If services and individual acquisition programs are implementing energy-related KPPs, the study seeks to describe how they are implementing energy-related KPPs, and to identify the impacts of energy-related KPPs in acquisition programs.

It explores the development and progression of the Navy's Green Procurement Program (GPP) and then assesses the Navy organizations' degree of success with incorporating GPPs into their installation procurement processes. As we surveyed a Navy installation's progress toward a more energy-efficient and resource-conscious procurement process, we measured that progress by the goals and metrics outlined in the Department of Defense's (DOD's) GPP instruction. The green procurement process was measured by integrating the Contract Management Maturity Model (CMMM), which describes a procurement agency's level of development across the six phases of the Contract Management Process (CMP) framework. The CMP divides the procurement process into six major phases: procurement planning, solicitation planning, solicitation, source selection, contract administration, and contract closeout or termination. While previous applications of the CMMM focused on broader aspects of buying commands, our questions and diagnosis of Navy installation organizations were specifically focused through a lens of green procurement and energy efficiency. Our results show that Department of Navy procurement personnel have only a "basic level" of contract management maturity in green procurement.



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Disclaimer: The views represented in this report are those of the authors and do not reflect the official policy position of the Navy, the Department of Defense, or the federal government.



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Introduction and Background

All Department of Defense (DOD) acquisition workforce members are guided by the Federal Acquisition Regulation (FAR) in how to consider, and in some cases give preference to, a certain contract offeror or certain products. Among these preferred products are those described in Executive Order (EO) No. 13693 (2015), *Planning for Federal Sustainability in the Next Decade*, as being “environmentally preferable.” Environmentally preferable products and services are defined as those acquired products and services that “have a lesser or reduced effect on human health and the environment when compared to other products and services that serve the same purpose” (Executive Order No. 13693, 2015). Similarly, Parts 7 and 23 of the FAR emphasize consideration of the environmental and energy impacts in acquisition planning.

The U.S. federal government’s “Green Product Procurement” initiative began in earnest with EO No. 12873 of October 20, 1993, which encouraged the bolstering of such programs, including the “the acquisition of recycled and environmentally preferable products by the Federal Government” and “the development of a federal implementation plan and guidance for instituting economically efficient federal waste prevention, energy and water efficiency programs, and recycling programs within each agency” (Executive Order No. 12873, 1993).

In August 2004, the DOD issued Green Product Procurement policy, guidance, and strategy that significantly broadened the focus for the use of preferential purchasing programs. That policy, which became the cornerstone of the Department of the Navy (DON) Green Procurement Program (GPP), defines *green procurement* as the “purchase of environmentally preferable products and services in accordance with federally mandated ‘green’ procurement preference programs” (DON, 2009, p. 1). In 2010, this GPP policy was both solidified and made more strategically central by then-Secretary of the Navy (SECNAV) Ray Mabus in his Energy Program for Security and Independence, wherein he created energy targets and metrics for Navy shore organizations to “produce 50 percent of shore-based



energy from alternative sources by 2020” (DON, 2010, p. 16).

GPP guidance is further expanded to its most recent policy and implementing instructions by EO No. 13693, dated March 19, 2015, *Planning for Federal Sustainability in the Next Decade*. The goal of this EO, to “maintain Federal leadership in sustainability and greenhouse gas emission reductions,” is carried out by directing the use of “environmental performance and sustainability factors,” which are “included to the maximum extent practicable for all applicable procurements in the planning, award, and execution phases of the acquisition” (Executive Order No. 13693, 2015).

To assess the extent to which Navy installations are accomplishing these goals and to make recommendations on continued green procurement improvements, we surveyed Navy personnel at the installation level on meeting current SECNAV green procurement goals and their associated organizational feedback.



DOD Research, Statutory Policy, and Guidance

This section discusses the DOD research, principal statutory and legal policies, and EOs that give statutory guidance establishing green procurement and directing the DON to meet energy requirements and goals.

DOD Research

Prior work analyzing the ability of defense organizations to effectively and efficiently conduct procurement operations has helped build upon a growing body of knowledge that DOD contracting and purchasing agencies are utilizing to improve their organizations, processes, and abilities.

Dr. Rene Rendon (2003) of the Naval Postgraduate School (NPS) introduced a process by which to assess federal contract management capability within various defense agencies and commands by utilizing the Contract Management Maturity Model (CMMM). The CMMM paradigm was originally developed to assess the organizational contract management process capabilities of the DOD and defense contractors. For the purposes of this study, the CMMM offered two salient applications: The model assessed agencies using five discernable ratings of development, or maturity, that were clearly defined and characterized, and it sorted those ratings across the six major phases of the contracting process (Garrett & Rendon, 2005). Because contracting is an executive function, agencies could diagnose the strength and maturity issues of their respective contracting departments through each of the individual phases of contracting. They could also look holistically at whether their organization was internally set up to succeed across the entire contracting spectrum. Since its inception, the CMMM has been applied at various Army (Rendon, 2011), Navy (Graham, Wallace, & Lewis, 2010), and defense contractor organizations (Puma & Scherr, 2009), and has also been used to analyze and diagnose specific traits and abilities of those respective contracting shops, including ethics, mentorship, and overall contracting competencies (Anglin & Good, 2009).



DeLancey, Harris, and Ramsey (2011) assessed the ability of operational contracting organizations to successfully accomplish green acquisition goals. Their assessment of Air Force organizational capability in achieving green procurement goals was made by taking the Yoder Three-Tier model for optimal planning and execution of contingency contracting (Yoder, 2004), and applying that framework and the metrics to grade an organization's personnel, platforms, and protocol across the six major phases of contracting. Although they did not utilize the CMMM to assess or diagnose their contracting organizations, the researchers' focus on green energy procurement and the questions they posed in their surveys were useful in establishing the level of organizational competency and ability of their organizations to accomplish Air Force and DOD green acquisition policy.

Executive Orders

Executive orders are directives or actions made by the president that have a direct impact on federal agencies and the service branches. They are orders generally directed to, and intended to govern actions by, government officials and agencies. Over the last 15 years, the volume of EOs pertaining to environmental practices grew with the government's and the public's growing interest in energy conservation. More recent EOs became more refined, leading to the newest iteration of environmental EOs.

Executive Order No. 13693 (2015)

EO No. 13693, *Planning for Federal Sustainability in the Next Decade*, was signed by President Obama on March 19, 2015. Its goal was to maintain federal leadership in sustainability and greenhouse gas emission reductions; Section 16 of the EO revoked the following directives:

- Executive Order 13423 of January 24, 2007;
- Executive Order 13514 of October 5, 2009;
- Presidential Memorandum of December 2, 2011 (*Implementation of Energy Savings Projects and Performance-Based Contracting for Energy Savings*);



- Section 1 of Presidential Memorandum of February 21, 2012 (*Driving Innovation and Creating Jobs in Rural America through Biobased and Sustainable Product Procurement*); and
- Presidential Memorandum of December 5, 2013 (*Federal Leadership on Energy Management*); and
- Presidential Memorandum of May 24, 2011 (*Federal Fleet Performance*). (EO No. 13693, 2015, p. 15881)

Along with revoking prior EOs, EO 13693 directed federal agencies, when life-cycle cost-effective, to promote building energy conservation, efficiency, and management. Starting in fiscal year (FY) 2016, federal agencies would reduce their agency infrastructure energy consumption by 2.5% annually through the end of FY 2025, “relative to the baseline of the agency’s building energy use in fiscal year 2015 and taking into account agency progress to date” (Executive Order No. 13693, §3(a)(1)). The order further directs federal agencies as follows:

Improve data center energy efficiency at agency facilities by:

- Ensuring the agency chief information officer promotes data center energy optimization, efficiency, and performance;
- Installing and monitoring advanced energy meters in all data centers by fiscal year 2018;
- establishing a power usage effectiveness target of 1.2 to 1.4 for new data centers and less than 1.5 for existing data centers.
- Ensure that at a minimum, the following percentage of the total amount of building electric energy and thermal energy shall be clean energy, accounted for by renewable electric energy and alternative energy:
 - Not less than 10 percent in fiscal years 2016 and 2017;
 - Not less than 13 percent in fiscal years 2018 and 2019;
 - Not less than 16 percent in fiscal years 2020 and 2021;
 - Not less than 20 percent in fiscal years 2022 and 2023; and
 - Not less than 25 percent by fiscal year 2025 and each year thereafter.
- Improve agency water use efficiency and management, to include storm-water management by:
 - Reducing agency potable water consumption intensity measured in gallons per gross square foot by 36 percent by fiscal year 2025 through reductions of 2 percent annually through fiscal year 2025 relative to a baseline of the agency’s water consumption in fiscal



year 2007;

- Installing water meters and collecting and utilizing building and facility water balance data to improve water conservation and management;
- Reducing agency industrial, landscaping, and agricultural (ILA) water consumption measured in gallons by 2 percent annually through fiscal year 2025 relative to a baseline of the agency's ILA water consumption in fiscal year 2010; and
- Installing appropriate green infrastructure features on federally owned property to help with stormwater and wastewater management.
- If [an] agency operates a fleet of at least 20 motor vehicles, improve agency fleet and vehicle efficiency and management by ... taking actions that reduce fleet-wide per-mile greenhouse gas emissions from agency fleet vehicles, relative to a baseline of emissions in fiscal year 2014, to achieve the following percentage reductions:
 - Less than 4 percent by the end of fiscal year 2017;
 - Not less than 15 percent by the end of fiscal year 2021; and
 - Not less than 30 percent by the end of fiscal year 2025.
(Executive Order No. 13693, 2015, p. 15872)

Energy Policy Act of 2005

The Energy Policy Act (EPA) of 2005 requires federal agencies to be energy efficient and to maximize the use of renewable energy. Most saliently to this research, the act sets the following targets:

- By October 1, 2012, all federal buildings shall, for the purposes of efficient use of energy and reduction in the cost of electricity used in such buildings, be metered.
- Renewable energy purchase requirement:
 - ≥ 3 percent for FY2007–FY2009,
 - ≥ 5 percent for FY2010–FY2012,
 - ≥ 7.5 percent for FY2013 and each fiscal year thereafter.
(Energy Policy Act of 2005, 2005, p. 652)



DOD Directive Number 4180.01 (2014)

The genesis of DOD Directive (DODD) 4180.01 (DOD, 2014) was to address DOD national energy security, and to assign responsibilities for energy planning, use, and management for DOD agencies. Among other things, its purpose was to mitigate costs associated with the use and management of energy and to direct the improvement of the energy performance of DOD installations and military forces. Of the six major directed actions, we focus on three in this research:

1. Diversify and expand energy supplies and sources, including renewable energy sources and alternative fuels,
2. Ensure that energy analyses are included in DOD requirements, acquisition, and planning, programming, budgeting, and execution (PPBE) processes, and
3. Educate and train personnel in valuing energy as a mission essential resource. (DOD, 2014, pp.1–2)

The implications from this directive are numerous. However, we look specifically at three items that would impact Navy installation and procurement planning:

1. The subsequent procurement guidance and doctrine created by the service secretaries must be consistent with this energy guidance.
2. Installations must “improve energy performance and mission effectiveness; [be] cost effective; and as appropriate, [be] capable of using multiple energy sources” (DOD, 2014, p. 5).
3. Energy considerations and performance incentives now must be considered in contracts and operational contract support.

This third factor is integral in assessing contracting competency in the achievement of green energy and efficiency goals.

SECNAV Instruction 4101.3A

SECNAV Instruction (SECNAVINST) 4101.3A establishes and implements the Navy’s most current energy program policy (Office of the SECNAV, 2017). It cancels SECNAVINST 4100.9A and assigns responsibility for the administration of the energy program and its associated and proper procurement actions to DON



management across six major areas emphasizing and treating energy as a strategic resource. From these areas, we draw several implications:

1. DON leadership will focus on increasing “the reliability, resiliency, and efficiency of [its] installations to mitigate vulnerabilities related to energy supply and ensure energy security” (Office of the SECNAV, 2017, p. 2) when it comes to the management of installation energy and resources. In that focus, DON personnel should specifically look at diversifying energy sources, “including the use of distributed energy resources; maximize energy efficiency; and consider all options to meet mobility and electric distribution planning requirements” (Office of the SECNAV, 2017, p. 2).
2. In fulfilling these goals through installation acquisition, DON managers will include “evaluation of energy performance in procurement actions” and by integrating “energy reliability, resilience, and efficiency into facility and utility system design for new construction, repair, and modernization projects” (Office of the SECNAV, 2017, p. 2).
3. Installation leadership should look to “strategic partnerships” (Office of the SECNAV, 2017, p. 2), which are the result of ongoing collaborations and partnerships with government and non-government organizations at local, state, and federal levels to better understand alternate approaches to address energy and resource allocation and conservation. These partnerships will help address challenges and shortfalls that the DON could experience with satisfying energy policies.
4. DON leadership is charged with the education and training of their personnel on energy programs and goals, along with how to utilize the data-driven management and oversight of those programs. Military and civilian personnel should be trained on the use of those data, including “collection, aggregation, and analytics to develop business decision tools, optimize energy decisions, improve management, and inform future investment in DON assets and programs” (Office of the SECNAV, 2017, p. 3).

OPNAV Instruction 4100.5E

The Office of the Chief of Naval Operations issued Energy Instruction 4100.5E, *Shore Energy Management*, on June 22, 2012, which set forth an aggressive and systemic energy consumption reduction strategy at all Navy installations (Office of the Chief of Naval Operations, 2012). The energy-reduction strategy’s implications for acquisitions are two-fold:



1. The strategy reiterates that procurement of renewable energy will be in accordance with Public Law 111-84, Executive Order 13423, and Public Law 109-58 (Sec. 2843). Public Law 111-84 is better known as the National Defense Authorization Act for Fiscal Year 2010, which states that energy procurement and resource considerations will be aligned with existing DOD renewable energy goals and will be made with sources that meet facility energy needs. EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, was revoked by and replaced by EO 13693, as previously discussed. Public Law 109-58, from August 8, 2005, is better known as the Energy Policy Act of 2005, which further elaborates on federal procurement of energy-efficient products, specifically Energy Star products and other items rated for energy efficiency.
2. The strategy specifies that business decision models should be followed in energy reduction acquisitions, specifically, that the selection process for partnerships and acquisition-level constraints should be considered in the acquisitions process.

The strategy is designed to achieve, in the most cost-effective manner, the legal compliance for shore energy and sustainability as well as the following shore energy and sustainability goals listed in OPNAVINST 4100.5E, June 2012:

- a. A 30 percent facility energy intensity reduction by 2015
- b. A fossil fuel consumption reduction and an increase in the use of alternative fuels by the Navy's non-tactical vehicle (NTV) fleet. (As stated by OPNAVINST 4100.5E, June 2012, "To the maximum extent possible, NTVs powered by alternative fuels shall be cost-effective over their life cycle when compared to NTVs powered by fossil fuels" [p. 2].)
- c. An increase in water efficiency of shore infrastructure
- d. Fifty percent ashore consumption reduction by 2020
- e. Fifty percent total ashore energy from alternative sources by 2020
- f. Fifty percent of installations net-zero consumers by 2020
- g. Fifty percent reduction in petroleum used in the commercial vehicle fleet by 2015

Here we note that the "cost-effective" measures used to achieve these goals can largely be considered a product of how well the acquisition strategy was performed by the installation organization.



Relevant Federal Acquisition Regulation (FAR) Parts

The Federal Acquisition Regulations System codifies and publishes uniform policies and procedures for acquisition by all executive agencies. The Federal Acquisition Regulations System consists of the Federal Acquisition Regulation (FAR), which is the primary document of the system, and agency acquisition regulations that implement or supplement the FAR.

FAR Part 7: Acquisition Planning

In this section, we provide a brief definition and legal scope of the FAR Part 7 that identifies federal agency responsibilities in the acquisition planning systems.

7.103 The agency head or a designee shall prescribe procedures for—

(p) Ensuring that agency planners—

(1) Specify needs for printing and writing paper consistent with the 30 percent postconsumer fiber minimum content standards specified in Executive Orders;

(2) Comply with statutory policy regarding procurement of: bio-based products, products containing recovered materials, environmentally preferable products and services, ENERGY STAR and Federal Energy Management Program-designated products, renewable energy, water-efficient products, and non-ozone depleting products;

(3) Comply with the Guiding Principles for Federal Leadership in High-Performance and Sustainable Buildings (Guiding Principles), for the design, construction, renovation, repair, or deconstruction of Federal buildings;

(4) Require contractor compliance with Federal environmental requirements, when the contractor is operating Government-owned facilities or vehicles, to the same extent as the agency would be required to comply if the agency operated the facilities or vehicles.

7.105 Contents of Written Acquisition Plans

(b) Plan of action—

(17) Environmental and energy conservation objectives. Discuss all applicable environmental and energy conservation objectives associated with the acquisition (see FAR Part 23), the applicability of an environmental assessment environmental impact statement (40



CFR 1502), and the proposed resolution of environmental issues, and any environmentally related requirements to be included in solicitations and contracts (FAR 11.002 and 11.303).

FAR Part 23

FAR Part 23 prescribes acquisition policies and procedures for protecting and improving the quality of the environment, and for fostering markets for sustainable technologies, materials, products, and services. The following is an excerpt from FAR Part 23:

(1) Subpart 23.1—Sustainable Acquisitions Policy.

(a) Federal agencies shall advance sustainable acquisition by ensuring that 95 percent of new contract actions for the supply of products and for the acquisition of services (including construction) require that the products are—

(1) Energy-efficient (ENERGY STAR or Federal Energy Management Program (FEMP)-designated);

(2) Water-efficient;

(3) Biobased;

(4) Environmentally preferable (e.g., EPEAT-registered, or non-toxic or less toxic alternatives);

(5) Non-ozone depleting; or

(6) Made with recovered materials.

(2) Subpart 23.2—Energy and Water Efficiency and Renewable Energy

(a) This subpart prescribes policies and procedures for—

(1) Acquiring energy- and water-efficient products and services, and products that use renewable energy technology; and

(2) Using an energy-savings performance contract to obtain energy-efficient technologies at Government facilities without Government capital expense.

(b) This subpart applies to acquisitions in the United States and its outlying areas. Agencies conducting acquisitions outside of these areas must use their best efforts to comply with this subpart. (FAR



Reports

Government documents and reports contain useful information that can explain executive policy and compliance with orders and directives, as well as provide statistical data to illustrate strengths and weakness identified within the report.

a. *Congressional Research Service Report: Identifying Incentives and Barriers to Federal Agencies Achieving Energy Efficiency and Greenhouse Gas Reduction Targets*

The 2010 CRS report *Identifying Incentives and Barriers to Federal Agencies Achieving Energy Efficiency and Greenhouse Gas Reduction Targets* explains that through Energy Savings Performance Contracts (ESPCs), federal agencies may use an energy service company (ESCO) to accomplish energy-efficiency improvement projects without incurring up-front capital costs or requiring special appropriations; however, the lack of federal rules delays implementation opportunities for energy efficiency goals, and greenhouse gas reduction targets in the future may come through smaller, more difficult-to-achieve reductions in energy consumption based on high-tech solutions.

b. *Department of Defense Office of Inspector General Report 2017-044: Naval Facilities Engineering Command Management of Energy Savings Performance Contracts Needs Improvement*

As outlined in DOD Office of the Inspector General (DODIG, 2017) Report 2017-044, the objective of this IG report is to determine whether the DON has been effectively managing energy savings performance contracts. The DODIG found that Naval Facilities Engineering Command (NAVFAC) officials did not effectively manage all 38 ongoing performance-phase energy savings performance contracts, valued at \$1.55 billion. Specifically, NAVFAC officials did not appoint contracting officer's representatives for 31 of the ongoing performance-phase energy savings performance contracts and did not develop a quality assurance surveillance plan for any of the 38 ongoing performance-phase energy savings contracts. As of August 1,



2016, NAVFAC officials had reduced the number of ongoing energy savings performance contracts without an appointed contracting officer's representative from 31 to six and had developed a quality assurance surveillance plan for all 38 ongoing contracts. NAVFAC officials may not know whether the 38 ongoing contracts are fully compliant with FAR, DOD, and NAVFAC guidance (DODIG, 2017).

**c. Government Accountability Office Report (GAO-17-461):
Additional Data and Guidance Needed for Alternatively
Financed Energy Projects**

The GAO's (2017) *Additional Data and Guidance Needed for Alternatively Financed Energy Projects* explains that the DOD has used alternative financing arrangements for hundreds of energy projects to improve energy efficiency, save money, and meet energy goals; however, the military services have not collected and provided the DOD with complete and accurate data to aid DOD and congressional oversight of alternatively financed energy projects. GAO-17-461 report seeks to

1. Evaluate the military services' use of alternative financing arrangements since 2005 and data collected and provided to DOD on those projects.
2. Assess reported project savings and verification of reported performance.
3. Describe benefits and disadvantages and potential other costs of using alternative financing rather than up-front appropriations. (GAO, 2017)

The GAO (2017) report found that since 2005, the DOD has awarded 464 contracts for alternatively financed energy projects. The GAO was unable to identify, and the military services could not provide, total contract costs for 196 of the 446 alternatively financed energy projects since 2005. While DOD guidance requires the military services to track and store data related to energy projects, the military services have not collected complete and accurate data or consistently provided the data to the military department or DOD headquarters level on an annual basis to aid DOD oversight and to inform Congress.



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Methodology

This study used the following procedure. We reviewed the relevant literature, including the Federal Acquisition Regulation (FAR; 2017); the EOs that specify energy efficiency and green procurement; and the GAO and CRS reports that further expand on effective green procurement strategies and competencies, and the associated barriers with carrying out those strategies. Next, we compared the established EOs and the most current DOD GPP policy with a sample of current and prior Navy military and civilian contracting to assess their ability to fulfill Navy GPP objectives and goals. In the final section, we applied the Contract Management Maturity Model (Rendon, 2007) to further assess the knowledge and awareness of personnel. We took into consideration respondents' understanding of the phases of acquisition, as well as the degree to which procurement personnel were satisfying the DOD's green procurement strategies, as laid out in the 2008 GPP strategy report (Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics [OUSD(AT&L)], 2008a) and the DON (2009) green procurement guide, which states,

Each organization initiating contracting/procurement actions or credit card purchases is responsible for complying with GPP purchasing mandates. Environmental and procurement offices across the Department will support organizations in meeting these mandates. (p. 1)

We created a Green Procurement Program Model (GPPM) to help identify essential gaps within the contracting processes and to determine how well organizations are positioned to accomplish Navy GPP strategy. The resulting analysis highlights possible policy, training, and competency issues for personnel and managers, and lends support to developing additional training in green procurement.

With this research, we intend to answer the following questions:

1. What has been the impact of statutory and regulatory targets on Navy installations, specifically those that include green energy considerations in acquisitions?
2. How successful have Navy installations been in satisfying



regulatory guidance with respect to Navy GPP strategy and policy?

3. How mature are the contract management processes that Navy installation contracting organizations use to fulfill Navy GPP strategy and policy?



Findings

Green procurement policy was set by the DOD's Green Procurement Program (GPP) strategy of FY2004. The updated governing policy was issued by then Under Secretary of Defense for Acquisition, Technology, and Logistics, Honorable John J. Young, Jr., in the updated *Green Procurement Program (GPP) Strategy* memorandum of Dec 2, 2008 (OUSD[AT&L], 2008b). This policy grants the exercising power for implementing the GPP program across all DOD component services with the purpose of

enhancing and sustaining mission readiness through cost effective acquisition that achieves compliance and reduces resource consumption and solid and hazardous waste generation. Green procurement includes the acquisition of:

- Recycled content products
- Environmentally preferable products and services,
- Bio based products, energy- and water-efficient products,
- Alternate fuel vehicles and alternative fuels,
- Products using renewable energy, and
- Alternatives to hazardous or toxic chemicals. (OUSD[AT&L], 2008a, p. 5)

Green Procurement Program Objectives

With a clear of understanding of GPP, the next step is to understand which objectives are relevant and appropriate for the DOD service components to achieve. Again, we look at the established guidance set by the DOD GPP Strategy (OUSD[AT&L], 2008a), which states that the GPP objectives are to

- Educate appropriate DOD employees on the requirements of Federal “green” procurement preference programs, their roles and responsibilities relevant to the DOD GPP, and the opportunities to purchase green products and services.
- Increase purchases of green products and services consistent with the demands of mission, efficiency, and cost-effectiveness, with



continual improvement toward federally established procurement goals.

- Reduce the amount of solid waste generated.
- Reduce consumption of petroleum and increase the use of alternative and renewable fuel sources.
- Increase in the use of renewable energy.
- Reduce the use of ozone depleting substances and hazardous and toxic chemicals.
- Improve the procurement of green electronic equipment through smarter acquisition.
- Increase the use of bio-based products and reduce dependence on fossil energy-based products derived from imported oil and gas.
- Reduce consumption of energy and natural resources.
- Expand markets for green products and services. (OUSD[AT&L], 2008a, p. 6)

DOD Requirements for Green Procurement Management

This section of the DOD green procurement policy is also mandated by the established guidance set by DOD GPP Strategy (OUSD[AT&L], 2008a), which states the minimum requirements within the framework for all DOD service agencies.

Policy

All DoD service agencies must establish “policies that will meet the set forth requirements, objectives, and are appropriate to the organization/installation that is conducting the procurement activities” (OUSD[AT&L], 2008a, p. 10).

Planning

Equally, all DoD service agencies must “[e]stablish and document a process that institutes a GPP preference program and will meet or exceed the requirements in accordance with law, regulations, and executive orders” (OUSD[AT&L], 2008a, p.10).



Implementation and Operation

This step ensures that all “GPP roles and responsibilities are identified and that proper training is tailored to the nature and quantity of purchases made by the organization.” Accordingly, it calls for an “implementation of a communication program that educates all government personnel and contractors about GPP compliance, the documentation requirements, and the appropriate operational controls” (OUSD[AT&L], 2008a, p. 12).

Checking and Corrective Actions

All GPP programs must have a “process for evaluating and reporting performance that complies with installation- and DOD-level objectives and targets.” They must “ensure the use of DOD data tracking and audit systems, develop measurement tools that meet local missions and goals, and help achieve self-assessments to address deficiencies ... [and] ... develop corrective actions procedures to include evaluation of effectiveness of implementation actions” (OUSD[AT&L], 2008a, p. 13).

Management Review

Establish an annual comprehensive review by organization’s senior management at each level of the department. The aim is to ensure suitability, effectiveness, and continual improvement of the GPP program (OUSD[AT&L], 2008a, p. 14)

DOD Green Procurement Metrics

All employees who perform procurement and acquisition functions for the OSD and its subordinate components must observe the following DOD Green procurement metrics:

1. Accurately completing the Codes in the Contract Action Report (or successor data capture report), using data from the Federal Procurement Data System-Next Generation (or successor system).
2. Purchases of Federally-defined indicator items as determined using



data from Defense Logistics Agency's Green Procurement Reporting/Environmental Reporting Logistics System at Defense Logistics Information Service (DLIS).

3. Personnel trained in green procurement using data from the Defense Acquisition University's training information database.
4. Number of negative contract audit findings that indicate lack of compliance with GPP requirement. (OUSD[AT&L], 2008a, p. 26)

A fifth metric was to measure organizations participating in the Federal Electronics Challenge (FEC). This partnership program ended in August 2013 but is still providing technical information to federal procurement and acquisitions personnel (Environmental Protection Agency [EPA], 2017).

Navy Energy Program

Navy Energy Goals

In 2009, Secretary Mabus set forth five energy goals for the DON to use toward its energy efficiency and energy conservation on installations and in operational forces (Office of the SECNAV, n.d.). Among these goals is a commitment to reform requirements-setting, acquisition, and contracting processes to incorporate energy performance criteria into decisions for new systems (Office of the SECNAV, n.d.).

The following are the SECNAV energy goals:

- Increase Alternative Energy Use DON-Wide: By 2020, 50 percent of total energy consumption will come from alternative sources.
- Increase Alternative Energy Ashore: By 2020, the DON will produce at least 50 percent of shore-based energy requirements from alternative sources; 50 percent of Navy and Marine Corps installations will be net-zero.
- Sail the Great Green Fleet: The DON will demonstrate a Green Strike Group in local operations by 2012 and sail it by 2016.
- Reduce Non-Tactical Petroleum Use: By 2015, the DON will reduce petroleum use in the commercial fleet by 50 percent.
- Energy Efficient Acquisition: Evaluation of energy factors will be mandatory when awarding DON contracts for systems and buildings.

(Office of the SECNAV, n.d.)



Navy Energy Strategy

The Navy's energy strategy is to remain the world's leading maritime power with an overall plan of action or policy designed to achieve energy security, efficiency, and sustainability (Office of the SECNAV, 2009).

Navy Metrics

SECNAVINST 4101.3 establishes that the DON will approach the development and application of energy policy and development and use of energy metrics in a comprehensive manner which seeks consistent application across the DON. Metrics will be reviewed not less than biannually to ensure value and appropriateness of measures and analysis. (Office of the SECNAV, 2012)

In order to provide descriptive metric information and fiscal year estimates, the Office of the Assistant Secretary of Defense (Energy, Installations, and Environment; OASD[EI&E]) produces an annual report that separates all DOD services into energy management programs. This report, titled the *2015 Annual Energy Management Report (AEMR)*, details each branch of service of the DOD in its corresponding fiscal year and compares the projected goal with accomplished yearly goals.

Overall, the DOD and DON have fallen short of meeting their proposed goals and evaluated performance objectives (see Figure 1).



Goals & Objectives	Metric	Component	FY15	Goal (FY15)
Reduce Facility Energy Intensity Relative To FY03 Baseline (EISA 2007)	British Thermal Unit (Btu) of energy consumed per gross square foot of facility space.	DoD	-19.9%	-30%
		USAF	-24.3%	
		Army	-18.0%	
		Navy	-21.5%	
		USMC	-20.2%	
Consume More Electric Energy From Renewable Sources (EPACT 2005)	Total renewable electricity consumption as a percentage of total facility electricity consumption.	DoD	3.6%	75%
		USAF	6.2%	
		Army	1.8%	
		Navy	1.9%	
		USMC	9.5%	
Produce Or Procure More Energy From Renewable Sources (10 U.S.C. §2911e)	Total renewable energy (electric & non-electric) produced or consumed as a percentage of total facility energy consumption.	DoD	12.4%	25% by 2025
		USAF	6.9%	
		Army	12.0%	
		Navy	25.9%	
		USMC	5.0%	
Reduce Potable Water Intensity Relative To FY07 Baseline (EO 13423)	Gallons of water used per square foot of facility space.	DoD	-22.3%	-16%
		USAF	-23.4%	
		Army	-26.5%	
		Navy	-12.2%	
		USMC	-31.1%	
Reduce Petroleum Consumption In Non-Tactical Vehicles Relative To FY05 Baseline (EISA 2007, EO 13514)	Gallons of gasoline equivalent of petroleum fuel consumed.	DoD	-33.6%	-20%
		USAF	-14.7%	
		Army	-41.1%	
		Navy	-25.1%	
		USMC	-42.9%	

Figure 1. Fiscal Year 2015 Progress toward Installation Energy and Water Goals.
Source: OASD(EI&E; 2016).

Acquisition Policy for Navy GPP

On February 5, 2009, Assistant Secretary of the Navy for Installations and Environment B. J. Penn and Assistant Secretary of the Navy for Research, Development, and Acquisition Sean J. Stackley signed the *DON Green Procurement Program Implementation Guide* (DON, 2009). The intent was to formalize and direct all Navy activities and installations to procure green products such as energy-efficient bio-based products, non-ozone depleting substances, and so forth. The publication also made all DON personnel responsible for executing and understanding GPP policy (DON, 2009).



Assessment of Navy Shore Green Procurement

We next investigate Navy GPP and assess both the Navy shore procurement process and the organizational contract management capability by utilizing two recognized models. The first model used is the Contract Management Process (Rendon, 2007), which helps to define and distinguish the six major phases of the acquisition process. The second is the Contract Management Maturity Model (CMMM), which assesses the acquisition processes of organizations through each phase of the contract management process. The CMMM serves as a tool that helps to assess and measure process and organizational gaps by ranking the maturity of those processes in each phase of acquisition. Organizational leadership can then realize improvement opportunities from the assessments and can take deliberate steps to add efficiency to their organizational procedures and improve critical core procurement processes. The CMMM also aids in identifying shortfalls in organizational competencies and subsequently enhancing knowledge-sharing opportunities toward improving organizations' mission success—in this case, through effective contract management. We use these two models to help determine how Navy GPP has influenced Navy installation organizations, and whether Navy GPP has been effectively implemented in those organizations.

Models

In this section, we define the two models and frameworks through which we assess the impact of Navy GPP on Navy shore activities and the progress those organizations have made to integrate those policies into their organizations. We define the framework of the Contract Management Process and CMMM and their various components, and we explain how we fit GPP process maturity into each of the phases of the acquisition process. We chose the Contract Management Process because it clearly distinguishes and lays out the entire span of the acquisition life cycle. Capability models that measure maturity have been utilized by other organizations to assess their varying levels of process capability, and those models have traditionally defined *capability* as “the inherent ability of a process to produce



planned results” (Ahern, Clouse, & Turner, 2001, p. 4) and defined *maturity* as “a measure of effectiveness in any specific process” (Dinsmore, 1998, p. 169). The CMMM can be scaled and tuned to effectively diagnose the maturity of an organization’s contract and buying processes in any capacity (e.g., ethics, potential for fraud, mentoring). Because those varying degrees of maturity are then seen through the lens of all the phases of the Contract Management Process, we selected the CMMM as the most advantageous way to assess the impact of GPP on those organizations.

The Contract Management Process

The six-phase Contract Management Process model was first developed and introduced by Rendon (2003) of the Naval Postgraduate School. The phases encompass the entire life cycle of the acquisition process, and the model was a departure from the way that many contracting organizations characterized existing government acquisition, as occurring in two major steps: pre-award and post-award. Now, contracting procedures are divided into six phases: procurement planning, solicitation planning, solicitation, source selection, contract administration, and contract closeout (Rendon, 2007). The roles and relationships of end-users, stakeholders, and contracting offices have likewise changed, based on the acquisition phase. Each phase “provides critical planning, execution, and control of the overall contracting process, and is integral to the success of the resultant contract and contractor” (Rendon, 2007, p. 1). Rendon initially published this framework in a 2003 doctoral dissertation titled *A Systematic Approach to Assessing Organizational Contract Management Maturity*, and later applied the model in his 2005 book, *Contract Management: Organizational Assessment Tools*, which he co-authored with Gregory A. Garrett. The phases are adapted and expanded upon in Figure 2 and the following description taken from Garrett & Rendon (2005).





Figure 2. The Six Phases of the Contract Management Process.
Source: Garrett & Rendon (2005).

Procurement Planning: This initial phase concerns itself with “identifying which business needs can be best met by procuring products or services from outside the organization” (Garrett, 2007, p. 81). This initial process involves making a series of make-or-buy decisions, the source of the procurement, and the timeline in which to complete the contract. The supply or service to be procured is normally defined by a major stakeholder, usually an end-user; however, the final requirements can be crafted by an integrated team of financial, technical, and marketing specialists, based on the technical complexities of the supply or service.

Solicitation Planning: While contracting personnel are not responsible for the determination of procurement requirements during the procurement planning phase of the acquisition, it is crucial that they stay engaged with end-users and those who are defining the requirements desired, to ensure that the type of contract and methods used to acquire the desired product or service are effective. The solicitation planning phase also includes the following activities:

- Selecting the appropriate contract type;
- Preparing the documents needed to support the solicitation.
- Documenting program requirements and identifying potential sources.
- Determining the procurement method (sealed bids, negotiated proposals, e-procurement methods, procurement cards, etc.);
- Developing the solicitation document [an Invitation for Bid, Request for Quotation, or Request for Proposal]
- Determining the proposal evaluation criteria and contract award strategy (lowest priced versus best value);
- Structuring contract terms and conditions; and
- Finalizing solicitation work breakdown structures (WBS), statements of work (SOW), or product or service descriptions. (Garrett & Rendon, 2005)



The use of cross-functional teams is seen as a best practice during this phase in the development of solicitations and identifying contract risks. The use of statements of objectives (SOO) and performance-based statements of work (SOW) is also considered a best practice (Rendon, 2007, p. 2).

Solicitation: The solicitation phase is the process of obtaining bids and proposals (information) from prospective sellers on how they can meet project needs. Based on the information gleaned from market research and information from industry, advertising is conducted on the procurement opportunity for interested suppliers to bid on through formal channels.

Source Selection: The source selection phase is the process of grading or assessing potential offerors using evaluation criteria, and formally awarding the contract. This process can be as simple as buying the product or service with a government credit card using the lowest price technically acceptable, or more complex for contracts requiring negotiations and independent cost estimates with sellers.

Contract Administration: This is the ongoing, post-award activity of ensuring that both the government and the awarded contractor are upholding the terms and conditions of the contract. Those requirements of the contract—and thus the amount of oversight—will differ, based on the statement of work, the contract type, and the period of performance for the contract. Typically, this administration phase of the process includes monitoring the contractor's work; using performance evaluation tools like schedule analysis to gauge the contractor's costs, schedule, and performance; and conducting project milestone reviews.

Contract Closeout/Termination: This final series of activities concerns themselves with ensuring the contract vehicle is properly and effectively closed to all stakeholders involved. There are typically three ways a government contract is ended and is closed out: because of successful completion (that is, it finishes the full period of performance), because the contract was terminated for the convenience (a unilateral decision made out of necessity by the government), or by termination for default, made when a contractor is deemed to be not responsible, in accordance



with FAR Part 9 (see Table 1). This final process includes the acceptance of products or services, processing final contractor payments, and documenting the contractor's performance (Garrett & Rendon, 2005).

Deliberate and successful execution of each of these phases is crucial to properly develop, award, and oversee contracts. Collectively, the proper execution of the entire acquisition life cycle also correlates to adherence with federal policies and procedures, specifically the FAR. These specific contracting activities with their associated FAR parts are shown in Table 1.

Table 1. The Contract Management Process and Corresponding FAR Parts

Contract Management Phase	Corresponding FAR Part/Reference
Procurement Planning	FAR Part 7: Acquisition Planning
Solicitation Planning	FAR Part 10: Market Research FAR Part 11: Describing Agency Needs FAR Part 12: Acquisition of Commercial Items FAR Part 13: Simplified Acquisition FAR Part 16: Types of Contracts
Solicitation	FAR Part 5: Publicizing Contract Actions FAR Part 6: Competition Requirements FAR Part 9: Contractor Qualifications
Source Selection	FAR Part 12: Acquisition of Commercial Items FAR Part 13: Simplified Acquisition Procedures FAR Part 15: Contracting by Negotiation
Contract Administration	FAR Part 42: Contract Administration and Audit Services FAR Part 46: Quality Assurance
Contract Closeout/ Termination	FAR Part 4.804: Closeout of Contract Files FAR Part 45: Government Property FAR Part 49: Termination of Contracts

Contract Management Maturity Model

The CMMM is utilized by organizations and outside assessors to provide a systematic assessment of an organization's contract management processes and their associated capability. The assessed processes are then categorized into five maturity levels ranging from Ad Hoc (Level 1) to Optimized (Level 5). The results



from the CMMM provide organizational leadership a means by which to gauge individual areas of the contracting process for further development and internal process improvement. While the initial application of the CMMM was utilized to assess the general contracting competencies of management, it has expanded to gauge other aspects of contracting processes management, such as ethics, organizational culture, and communication.

Levels of Maturity

The CMMM gauges process capability through each of the six phases of contracting, which are graded into one of five distinct levels of maturity. The lowest grade begins with Ad Hoc (Level 1), and then increases all the way to the most robust and defined Optimized level (Level 5). The more integrated and organizationally-aligned the processes, the higher the grade that specific phase of the contracting management is assigned. This ranges up to Optimized, wherein contract management is fully invested in continuous process monitoring and improvement (Garrett & Rendon, 2005).

The following are the Garrett & Rendon (2005) model descriptions of each of the contracting management maturity levels.

Level 1—Ad Hoc

The organization at this initial level of maturity acknowledges that contract management processes exist; that these processes are accepted and practiced throughout various industries, and within the public and private sectors. In addition, the organization's management understands the benefit and value of using contract management processes. Although there are not any organization-wide established basic contract management processes, some established contract management processes do exist and are used within the organization, but these established processes are applied only on an ad-hoc and sporadic basis to various contracts. There is no rhyme or reason as to which contracts these processes are applied. Furthermore, there is informal documentation of contract management processes existing within the organization, but this documentation is used only on an ad-hoc and sporadic basis on various contracts. Finally, organizational managers and contract management personnel are not held accountable for



adhering to or complying with any basic contract management processes or standards. (Garrett & Rendon, 2005, p. 50)

Level 2—Basic

Organizations at this level of maturity have established some basic contract management processes and standards within the organization, but these processes are required only on selected certain dollar thresholds, or contracts with certain customers. Some formal documentation has been developed for these established contract management processes and standards. Furthermore, the organization does not consider these contract management processes or standards established or institutionalized throughout the entire organization. Finally, at this maturity level, there is no organizational policy requiring the consistent use of these contract management processes and standards on other than the required contracts. (Garrett & Rendon, 2005, p. 50)

Level 3—Structured

At this level of maturity, contract management processes and standards are fully established, institutionalized, and mandated throughout the entire organization. Formal documentation has been developed for these contract management processes and standards, and some processes may even be automated. Furthermore, since these contract management processes are mandated, the organization allows the tailoring of processes and documents, allowing consideration for the unique aspects of each contract, such as contracting strategy, contract type, terms and conditions, dollar value, and type of requirement (product or service). Finally, senior organizational management is involved in providing guidance, direction, and even approval of key contracting strategy, decisions, related contract terms and conditions, and contract management documents. (Garrett & Rendon, 2005, p. 50)

Level 4—Integrated

Organizations at this level of maturity have contract management processes that are fully integrated with other organizational core processes such as financial management, schedule management, performance management, and systems engineering. In addition to representatives from other organizational functional offices, the contract's end-user customer is also an integral member of the buying or selling contracts team. Finally, the organization's management periodically uses metrics to measure various aspects of the contract management process and to make contracts-related decisions. (Garrett & Rendon, 2005, p. 53)



Level 5—Optimized

The final and highest level of maturity reflects an organization whose management systematically uses performance metrics to measure the quality and evaluate the efficiency and effectiveness of the contract management processes. At this level, continuous process improvement efforts are also implemented to improve the contract management processes. Furthermore, the organization has established lessons learned and best practices programs to improve contract management processes, standards, and documentation. Finally, contract management process streamlining initiatives are implemented by the organization as part of its continuous process improvement program. (Garrett & Rendon, 2005, p. 51)

The traditional CMMM assessment tool first utilized a web-based survey composed of 62 questions for analyzing an organization's use of specific contract management policies, procedures, and professional best practices, as reflected in the literature. These practices correlate to the strength, or maturity, of the organization's processes to successfully carry out acquisition outcomes in accordance with existing doctrine and can be used as a barometer for managerial priorities.

Navy Installation GPP Acquisition Analysis

This section provides a detailed analysis of the Contract Management Maturity Model survey questions and responses, as they pertain to Navy GPP and acquisition. We provide in-depth detail on the processes we used to associate the model with adherence to Navy GPP; an overall estimation of organizational process capability is also made.

Navy GPP Survey Sampling and Demographics

Our Navy installation GPP assessment is a web-based survey composed of 29 items related to green energy policy that spans the six contract management key process areas (approximately 5–6 items per key area). The questions consisted of yes/no, open-ended, and Likert scale—option responses with 3-point responses (Yes, No, I Don't Know), 5-point responses from highest (Always) to lowest (I Don't Know),



and binary, yes/no questions. The final survey question was an optional open-ended question that invited respondents to share any challenges or successes they had with implementing GPPs or adhering to green procurement policies. Each survey question directly relates to a specific phase in the contracting management process (see Table 2), with the exception of question 1 and question 29. We gave the responses numerical values that ultimately represent the organization's use of specific policy guidance and best practices as they pertain to fulfilling green energy procurement.

While CMMM assessments conventionally use approximately 62 questions to assess contracting process capability, we chose to use a less-exhaustive 29-question assessment that focuses the questions around green energy procurement, much as other organizations have previously done to assess GPP familiarity within their organizations. The questions were formulated from the checklist of organizational action items found in the DOD Updated Green Procurement Program Strategy (OUSD[AT&L], 2008b), and utilized by previous research on Green Procurement policy implementation by DeLancey et al. (2011). We also deliberately scaled down the number and types of questions from the typical assessment so as not to identify specific individuals or organizations answering the survey. The typical CMMM assessment tool allows for specific respondents and their respective contracting office to be identified, and we wanted individuals to feel open and comfortable taking the assessment, knowing that their identity would not be gleaned, based on the information they provided. The nature of the questions also aligns with the six phases of contract management, and as previously discussed, their answers correlate with a level of process maturity within the CMMM assessment model. Since the assessment is meant to acquire data on the contract management processes of organizations, purposeful sampling of respondents was important in order to accurately capture an organization's level of GPP contracting process maturity. The answers that respondents give, especially to the open-ended questions, would give the most utility to organizational leadership if responses were gathered from a smaller, more selective pool of participants—in this case from acquisition process stakeholders.



Table 2. Survey Questions and Their Associated Contract Management Phase

Contract Management Process	Related Survey Question	Reference
Procurement Planning	<p>1. Are you familiar with the Navy’s Green Procurement Program Implementation Guide (2009)?</p> <p>2. Have you taken the DAU course, CLC 046 Sustainable Procurement Program (formerly called “Green Procurement”)?</p> <p>3. Does the Organization have a list of vendors that offer green products or services?</p> <p>4. Has the Organization shared this list with requesting units?</p> <p>5. Has the organization established objectives/targets for GPP performance (purchase of green products and services) that are consistent with the nature and quantity of the purchasing activities?</p> <p>6. Does the organization have written procedures for setting, tracking, and updating objectives and targets?</p> <p>7. Does your organization already have a green procurement checklist in place for customers to use in creating their requirements package?</p>	<p>Question #3</p> <p>Question #7</p> <p>Question #9</p> <p>Question #10</p> <p>Question # 11</p> <p>Question #12</p> <p>Question #13</p>
Solicitation Planning	<p>1. Does the organization have defined language which they place in Solicitations that demonstrates a preference for green products or services?</p> <p>2. Does the organization have documented procedures to ensure green procurement opportunities are identified for each purchasing action?</p> <p>3. Does the organization have documented procedures for justifying and granting approval for decisions NOT to purchase green products or services?</p>	<p>Question #14</p> <p>Question #15</p> <p>Question #16</p>
Solicitation	<p>1. Have you received training on incorporating green requirements in the solicitation phase to include the appropriate FAR clauses, green considerations in PWS/SOWs, etc.?</p> <p>2. Before posting a solicitation, are there any RFIs posted requesting information for environmentally friendly opportunities for the services or products on the solicitation?</p> <p>3. When generating the solicitation, have green FAR clauses been included?</p> <p>4. Are there green requirements or considerations incorporated in the PWS/SOW or conditions for selecting a vendor?</p>	<p>Question #17</p> <p>Question #18</p> <p>Question #19</p> <p>Question #20</p>



Source Selection	1. Does the organization have documented procedures for justifying and granting approval for decisions not to purchase EPA- and USDA-designated items with recovered material or bio-based content and energy-efficient products designated by ENERGY STAR®/DOE?	Question #21
	2. Does the organization have documented procedures to ensure green products or services are purchased preferentially in each purchasing action?	Question #22
	3. If yes, is there an approval authority required to approve justifications for not purchasing green products or services?	Question #23
	4. Were environmental factors, such as reuse, recycle, waste reduction, and green procurement, evaluated as part of the performance, cost, and schedule analysis?	Question #24
	5. Does the organization have documented procedures to ensure that the relevant green procurement contract language and FAR clauses are incorporated in all contracts?	Question #25
	6. When awards involve use of recovered materials or EPA products, are the appropriate blocks completed when submitting the Contract Action Report information?	Question #26
Contract Administration	1. Does your unit/office have a Green Procurement Program?	Question #2
	2. Does your unit/office track the number of green products or services it contracts or purchases?	Question #4
	3. Does your organization's Green Procurement Plan have procedures and assign responsibility for routine measurement, evaluation, and reporting of Green Procurement Plan performance data?	Question #27
	4. Does the organization have checklists or procedures in place to ensure that contractors are compliant with the Green Procurement Plan aspects included in contracts?	Question #28
Contract Closeout/Termination	1. Does your unit/office have any specific "green" goals it tries to achieve? This could include things like Navy energy sustainability metrics, energy efficiency benchmarks, etc.	Question #5
Other Data	1. At what stage in the Contract Management Process is your organization most likely to address green procurement concerns?	Question #8
	2. Does your organization utilize a Green Procurement Program POC or advocate(s): personnel who help ensure Green Procurement Program adherence, training, etc.?	Question #29

Note. Questions developed from OUSD[AT&L] (2008b), and utilized by DeLancey et al. (2011).



The sampling in our research consisted of both Navy military and civilian personnel who were currently or had recently been in an acquisition or buying capacity. Active duty Navy personnel were sourced from buying and procurement divisions at Naval Support Activity (NSA) Monterey and its tenant commands, which included Naval Facilities Engineering Command (NAVFAC) and the Naval Postgraduate School (NPS). These agencies and their personnel provide contracting and acquisition support for the installation and are supporting elements to commander, Navy Installations Command (CNIC), for the fulfillment of Navy energy conservation and GPP metrics and policy. Faculty, staff, and students of the NPS Graduate School of Business and Public Policy (GSBPP) were selected if they had had experience in a contracting and/or purchasing capacity. The NSA Monterey and NPS civilian employee population included those selected employees currently working in a contracting and buying role at NPS, NAVFAC, and NSA Monterey. These individuals were selected by organizational management as necessarily being one of these stakeholders.

The types of supplies and services that these organizations and their contracting personnel acquire are different; however, the common denominator between them is the contract management processes involved. The potential respondents' emails were given to us by the directors of these contracting and buying organizations for these specific agencies, and the eligible respondents were then emailed the survey website link. Reminder emails were sent one week into the survey period. The survey included the appropriate provisions for maintaining the confidentiality of the respondents. Of the total 172 eligible survey participants, 26 completed the survey, yielding a response rate of a little over 15%.

Survey Results and Analysis

The CMMM assessment was analyzed by taking the survey responses and scoring the various types of question responses (see Tables 3–6) and placing an overall rank in the corresponding phases of contracting (see Figure 3). The results are placed in their respective phase of the acquisition life cycle and assigned a maturity level based on the aggregate score that question received. Question 29 is



an optional open-ended question that respondents can share best practices and challenges with implementing or adhering to GPPs.

Table 3. Navy GPP Response Scores (Questions 2, 4, 5,)

Survey Response	Survey Scale Response
I do not know < 33%	1 < 33%
No < 33%	3 < 33%
Yes <33%	5 < 33%

Table 4. Navy GPP Response Scores (Question 3)

Survey Response	Survey Scale Response
No < 33%	1 < 33%
Somewhat < 33%	3 < 33%
Yes <33%	5 < 33%

Table 5. Navy GPP Response Scores (Question 7)

Survey Response	Survey Scale Response
No < 50%	1 < 50%
Yes < 50%	5 < 50%

Table 6. Navy GPP Response Scores (Questions 18–20)

Survey Response	Survey Scale Response
I don't know	0
Never	1 < 20%
Seldom	2 < 20%
Sometimes	3 < 20%
Often	4 < 20%
Always	5 < 20%



Contract Management Maturity Model ©						
Maturity level	Procurement Planning	Solicitation Planning	Solicitation	Source Selection	Contract Admin	Contract Closeout
5 Optimized						
4 Integrated						
3 Structured			Q17			
2 Basic	Q3, Q7, Q12, Q9, Q13	Q14, Q15, Q16		Q1, Q2, Q2, Q2, Q2, Q2, Q2, Q2	Q2, Q4, Q2, Q2	Q5
1 Ad Hoc	Q10, Q11		Q1, Q1, Q1			

Figure 3. Navy GPP Contracting Management Maturity Assessment

Phase 1: Procurement Planning Identified as Ad Hoc/Basic

In order to gauge Navy installation organizations’ progress with adhering to Navy GPP doctrine during procurement planning, we analyzed the questions that ask about setting up personnel and organizations for GPP procurement success. According to the Navy green procurement guide, anyone involved in the acquisition process must complete the DAU’s CLC046 training course (DON, 2009). End-users and the organizations that define the requirements of the contract or purchase also need to be cognizant of how to design their requirements correctly. Based on the survey data, we concluded that the organizations did not consistently give training to either personnel or customers on setting up buys and acquisitions that satisfy Navy GPP. Organization leadership can improve the processes in this phase by laying out expectations and priorities that are accomplished with metrics that hold personnel accountable.



Phase 2: Solicitation Planning Identified as Basic

The solicitation planning of a purchase or contract requires personnel to conduct proper market research and review the past performance of prospective vendors. This is done to ensure the government receives products and services that are fair and reasonable in price, but also conducted to help the organization better understand its own requirements. According to DOD and Navy Green Procurement Strategy, all purchases and acquisition plans need to incorporate environmental and energy conservation objectives in the buying policy and contract clause language (OUSD[AT&L], 2008b). Because of the lack of processes that ensure the implementation of these policies, the solicitation planning phase was rated Ad Hoc in maturity.

Phase 3: Solicitation Identified as Ad Hoc/Structured

According to the Navy green energy procurement guide, GPP language needs to be incorporated in the early stages of the contracting process. Our questions that aligned to this phase of contracting asked contracting specialists and officers if they were posting requests for information (RFIs) or if they constructed the performance work statement to include green requirements. Based on these survey results, we determined that Navy installations do not have robust systems in place to facilitate the solicitation phase of contracting in accordance with Navy GPP. As shown in the results, presented in Appendix B, it does not appear that contracting specialists or buying personnel are deliberately seeking out green supplies or services, or if they are taking such action, they are doing so absent of established local processes.

Phase 4: Source Selection Identified as Basic

The questions asked in the survey pertaining to the source selection phase helped determine whether Navy installations incorporate processes that establish and maintain preference programs to facilitate green energy initiatives. The results indicate that these organizations significantly lack these processes, and also indicate that if organizations are fulfilling existing Navy green energy regulations, it is not



because of internal policy or structure that guides them to do so. The survey results also underscore the need for processes from authority to waive the requirement for green procurement preference. The protocols established in the *Department of Defense Green Procurement Program Strategy* document declare that it is the contracting official's responsibility to accurately complete such a waiver and document it in the respective contracting organization's contracting database for tracking purposes (OUSD[AT&L], 2008a). Most of the personnel surveyed are aware that they must report on contracts that involve EPA products when considering and awarding purchases and contracts; however, the inconsistent application of such action, coupled with the general lack of knowledge of the process, reduced the organizations' contract process in this phase of contracting.

Of note, the open-ended question responses—which did not contribute to the maturity scores assigned in the assessment—were still expressive of how robust installation organizations are with their source selection strategies. A few respondents stated that vendors who offered a battery turn-in and recycle program should be preferred, while others stated that many contracts for vehicles are awarded on a sole-source basis, and the requirements for that specific vehicle may not take green procurement into consideration.

Phase 5: Contract Administration Identified as Basic

The survey questions that aligned with the contract administration phase helped to indicate whether the installation organizations have goal-oriented processes in place that would help drive results for their organization and ensure ongoing oversight of their personnel. Ongoing follow up with contracted service providers did not routinely monitor their adherence with EPA and federal GPP guidance. Routine inspections of process performance, GPP awareness training, and a green energy point of contact for the organization are measures of compliance with policy (OUSD[AT&L], 2008a) and are generally not being followed by organizations.

Phase 6: Contract Closeout Identified as Basic



While the Navy and the DOD do not identify any specific metrics or policies for the closeout of contracts and buying during the contract closeout phase, there are activities usually associated with this final phase of the acquisition life cycle, as previously discussed. Documenting the kind of procurement, formally assessing the contractor or service provider in computer programs such as the Contractor Performance Assessment Reporting System (CPARS), and updating metrics on purchases and contracts that satisfy energy efficiency program goals are among these activities. Even though major contracting doctrine such as the FAR does not discuss any specific contract closeout mandates, we developed question 5 for our survey to adequately rate this section. As shown in the survey results, the organizational processes that support this last phase of contracting received a rating of Basic.

Supplemental Question Results

In addition to the Navy GPP questions, which aligned with the contracting management process, respondents were additionally given the opportunity to share their perspectives regarding GPP contracting processes and policy. While the results from the final question do not align with a specific contracting management process, the information gathered helped to underscore the effect that Navy green energy procurement policy has had on the respondent's organization and spoke to the contracting organization's internal policies and procedures. One respondent noted that while their organization had stated energy/utility use savings, there was no direct link between that and stated Navy GPP policies. Another comment made by several respondents was that government cardholders were generally encouraged to purchase green products; however, there were no metrics or procedures in place to ensure that was happening. Additionally, contracting personnel who administer service contracts regularly utilize an in-house contractor supplies/materials sheet, which shows the required green and environmentally safe items used by service contractors. While several buildings throughout NSA Monterey employ advanced energy-saving technologies such as waterless urinals, automatic light switches, and several electric vehicles, respondents were unable to specifically tie these



contracted and purchased products with any specific GPP strategy or local policy that would have guided their procurement. Generally, respondents were aware that policy existed and expressed a desire and need for more training and awareness on green procurement from higher-level authority.

Recommendations and Next Steps

From the analysis made with the Navy GPP CMMM assessment, we concluded that Navy installations lack the processes and internal mechanisms that would enable them to achieve the standards set forth in Navy green procurement policy. The process used in making these conclusions are shown in Table 3. As previously discussed in the Analysis section, the ratings were defined by how each question was answered and also by how they aggregated to a process maturity ranking. The assessment model breaks down the stronger and weaker areas in each key phase of contracting and illuminates the Navy's unsuccessful implementation of processes to facilitate compliance with Navy green energy program goals.

Based on the research conducted and from the subsequent results from assessing Navy installation-level buying and contracting personnel, we offer recommendations for improving how those organizations fulfill DOD and Navy GPP.

1. Establish and Identify Navy GPP liaisons. Implement dedicated personnel to oversee and facilitate Navy GPP awareness and program fulfillment. These individuals and their responsibilities within procurement organizations are articulated in the Navy GPP Strategy (DON, 2009), and as an advocate of GPP, they will be best positioned to ensure that personnel are completing mandatory GPP requirements.
2. Identify Green Procurement Socioeconomic metrics. Existing socioeconomic policies, such as the 8(a) Business Development Program, which OUSD(AT&L) fulfills through contracting, were created to help assist small disadvantaged businesses compete in the marketplace. Green socioeconomic policies could be added to existing federal socioeconomic acquisition goals to include environmentally conscious contractors and products identified by USDA and the EPA.
3. Echelon/installation utilization of the CMMM. As CNIC and higher echelon leadership develop explicit metrics and goals to achieve the Navy's GPP strategy, they would also capitalize on the CMMM



to assess how installation contracting organizations are best meeting those metrics. Developing a systematic means of compiling bodies of knowledge, best practices, and process improvement within the organization are among a few of the benefits from this.

Further Research

In this project, we examined Navy installation GPP policy adherence and assessed an organization's process maturity to fulfill such policy. While Navy green energy policy and strategy has existed and been developed for over a decade, the implementation of that policy is still in its infancy. Because of this, there are many areas to further explore policy implementation while also examining process improvements within DOD and Navy contracting organizations.

- (1) Assess the relationships of high-level Navy GPP policy with the installation

At the installation level, most of the metrics, goals, and policy fulfillment associated with Navy GPP comes from CNIC and other higher-level authority. It would be beneficial to assess the existing policy of higher echelons at NAVFAC, NAVSUP, and CNIC to assess how and where those policies touch the installation-level contracting organizations and how that policy translates to installation-level implementation of DOD GPP strategy.

- (2) Use a different assessment tool to analyze Navy contracting and buying organizations

While the CMMM was utilized because of its value to leaders to assess specific areas of weakness and pinpoint process improvements, other varieties of assessment models could be used to assess how organizations are structured and managed to fulfill Navy GPP strategy.

- (3) Explore the touchpoints between policy and organizational implementation



The data from the survey results indicate that many organizations inadvertently fulfill DOD and Navy GPP strategy and policy without realizing it. Many of their organizational automated systems and personnel are set up in a way to inconspicuously fulfill green strategy. Thus, additional research could be conducted to explore the means by which higher-level Navy GPP strategy and policy is explicitly being met at lower echelons.



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