

January 2011

## FUTURE FORCE SUSTAINABILITY: DEPARTMENT OF DEFENSE AND ENERGY EFFICIENCY IN A CHANGING CLIMATE

Laura Horton

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### Recommended Citation

4 Golden Gate U. Envtl. L.J. 303

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## COMMENT

FUTURE FORCE SUSTAINABILITY:  
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## I. INTRODUCTION

The environment is a consistent casualty of war.<sup>1</sup> Nations around the world face tension between providing the best military capability and protecting the environment,<sup>2</sup> and ecological concerns are often overshadowed by the urgency of wartime operations.<sup>3</sup> All major wars of the twentieth century have caused some kind of environmental harm.<sup>4</sup> For example, during World War II entire populations of indigenous animals were obliterated on tropical islands in the Pacific Theater, and a ship sunk by Germans leaked toxic mustard gas in the Adriatic Sea, threatening plant and animal life.<sup>5</sup> Forests were destroyed in Vietnam, and oil fires enveloped parts of Kuwait during the first Gulf War.<sup>6</sup>

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<sup>1</sup> STEPHEN DYCUS, NATIONAL DEFENSE AND THE ENVIRONMENT 136 (University Press of New England 1996).

<sup>2</sup> Richard W. Fisher, *The Environment and Military Strategy*, AIR & SPACE POWER J. 1995-1998, at 1, [www.airpower.maxwell.af.mil/airchronicles/cc/fisher.html](http://www.airpower.maxwell.af.mil/airchronicles/cc/fisher.html).

<sup>3</sup> *Id.* at 2.

<sup>4</sup> Nancye L. Bethurem, *Environmental Destruction in the Name of National Security: Will the Old Paradigm Return in the Wake of September 11?*, 8 HASTINGS W.-N.W. J. ENVTL. L. & POL'Y 109, 110 (2002).

<sup>5</sup> Fisher, *supra* note 2, at 2.

<sup>6</sup> Bethurem, *supra* note 4, at 110.

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Water, air and land have been polluted all over the world.<sup>7</sup> Even in ancient times, water was contaminated, vegetation burned, and crop land destroyed as offensive or defensive acts of war.<sup>8</sup> For instance, the Romans rendered their own Carthaginian fields infertile during the third Punic War.<sup>9</sup> While the United States has been able to avoid a great deal of conflict at home, it has failed to avoid the impact of training and preparation for foreign wars. These activities are significantly destructive to the environment in our country just as fighting a war would be to the environment abroad.<sup>10</sup>

The Pentagon controls around twenty-five million acres of land in the United States.<sup>11</sup> Although these lands serve as important reservoirs of biological diversity, they are often damaged by recurring military activities.<sup>12</sup> For example, the Cold War years resulted in enormous damage to the nation's land from hazardous waste contamination.<sup>13</sup> Nuclear weapons manufacturing facilities were located throughout over 2.4 million acres within the United States for decades and created dangerous radioactive waste that continues to pollute the water, air and soil.<sup>14</sup>

Along with developing and storing weapons, readiness training in preparation for war has been harmful to the environment in a myriad of ways.<sup>15</sup> In order to maintain one of the most elite fighting forces in the world, the Department of Defense (DOD) must conduct training and weapons development on a regular basis.<sup>16</sup> It is essential for military leaders to have access to land and airspace for training activities so they can achieve their goal of military readiness.<sup>17</sup> The United States Supreme Court has found that the need for "effective, realistic training" of Navy sailors, along with a public interest in national security, outweighed the

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<sup>7</sup> *Id.* at 110.

<sup>8</sup> See Fisher, *supra* note 2, at 3.

<sup>9</sup> *Id.*

<sup>10</sup> Bethurem, *supra* note 4, at 110.

<sup>11</sup> DYCUS, *supra* note 1, at 5.

<sup>12</sup> *Id.* at 5. Much of the DOD's lands contain important fish and wildlife habitat and are managed under cooperative agreements with the Department of Interior. These lands also provide public access for outdoor activities and recreation. Biological diversity is the "variety of the world's organisms, including their genetic diversity and the assemblages they form." World Resources Institute, What is Biodiversity, [www.archive.wri.org/page.cfm?id=1289&z=?](http://www.archive.wri.org/page.cfm?id=1289&z=?) (last visited Dec. 3, 2010).

<sup>13</sup> Bethurem, *supra* note 4, at 110.

<sup>14</sup> DYCUS, *supra* note 1, at 5.

<sup>15</sup> Bethurem, *supra* note 4, at 113.

<sup>16</sup> *Id.* at 112.

<sup>17</sup> *Id.* at 112.

concerns of environmental groups seeking a preliminary injunction against underwater sonar testing.<sup>18</sup> This perspective has dominated the debate over national security and the environment, especially following the events of September 11, and military readiness has become essential during uncertain times.<sup>19</sup>

Readiness training has resulted in thousands of contaminated sites from military munitions,<sup>20</sup> the consistent bombing of a delicate Hawaiian island for testing,<sup>21</sup> and diminished air quality from jet fuel exhaust.<sup>22</sup> Other resultant harms include marine mammal deaths by ocean noise pollution from Navy sonar testing<sup>23</sup> as well as injury to several species of migratory birds from live-fire training exercises.<sup>24</sup> And the costs are not only ecological, but also financial.<sup>25</sup> Since the Cold War, the price tag for cleaning up all DOD contaminated sites is tens of billions of dollars and counting.<sup>26</sup> This was all done in the name of national security.

Although it is clear that military activities can have a destructive effect on the environment, Congress has repeatedly found that the negative impacts of readiness training are outweighed by the need for a strong military.<sup>27</sup> This position is made apparent when lawmakers write express military exemptions into environmental laws for the purposes of

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<sup>18</sup> *Winter v. Natural Res. Def. Council, Inc.*, 555 U.S. 7, 129 S. Ct. 365, 378 (2008). The Court reasoned that although the possible harm to the ecological, scientific, and recreation interests that Navy sonar testing may cause is unquestionably serious, the “public interest in conducting training exercises with active sonar under realistic conditions plainly outweighs the [ecological] interests.” *Id.*

<sup>19</sup> Bethurem, *supra* note 4, at 126.

<sup>20</sup> DAVID M. BEARDEN, CONG. RESEARCH SERV., DEFENSE CLEANUP AND ENVIRONMENTAL PROGRAMS: AUTHORIZATION AND APPROPRIATIONS FOR FY2003, at 4 (2003), available at digital.library.unt.edu/ark:/67531/metacrs4276/m1/1/high\_res\_d/RL31456\_2003Feb03.pdf.

<sup>21</sup> Cheryl Lewis, *Kaho’olawe: Cultural and Environmental Impacts of Military Bomb Testing in Hawai’i* (Spring 2001), [www1.american.edu/ted/ice/hawaiibombs.htm](http://www1.american.edu/ted/ice/hawaiibombs.htm).

<sup>22</sup> Scott M. Palatucci, *The Effectiveness of Citizen Suits in Preventing the Environment from Becoming a Casualty of War*, 10 WIDENER L. REV. 585, 586 (2004).

<sup>23</sup> Joel R. Reynolds, *Submarines, Sonar and the Death of Whales: Enforcing the Delicate Balance of Environmental Compliance and National Security in Military Training*, 32 WM. & MARY ENVTL. L. & POL’Y REV. 759, 761 (2008).

<sup>24</sup> Press Release, Earthjustice, Court Halts Navy’s Illegal Bombing at Farallon de Medinilla, (Apr. 30, 2002), [www.earthjustice.org/news/press/2002/court-halts-navy-s-illegal-bombing-at-farallon-de-medinilla](http://www.earthjustice.org/news/press/2002/court-halts-navy-s-illegal-bombing-at-farallon-de-medinilla).

<sup>25</sup> DYCUS, *supra* note 1, at 80.

<sup>26</sup> DAVID M. BEARDEN, CONG. RESEARCH SERV., DEFENSE CLEANUP AND ENVIRONMENTAL PROGRAMS: AUTHORIZATION AND APPROPRIATIONS FOR FY2001, at 2 (Aug. 21, 2000), available at [www.globalsecurity.org/military/library/report/crs/RL30554\\_000821.pdf](http://www.globalsecurity.org/military/library/report/crs/RL30554_000821.pdf).

<sup>27</sup> DAVID M. BEARDEN, CONG. RESEARCH SERV., EXEMPTIONS FROM ENVIRONMENTAL LAW FOR THE DEPARTMENT OF DEFENSE: BACKGROUND AND ISSUES FOR CONGRESS (May 15, 2007), available at [www.fas.org/sgp/crs/natsec/RS22149.pdf](http://www.fas.org/sgp/crs/natsec/RS22149.pdf).

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national security.<sup>28</sup> However, amidst the concern for public safety and security, even the DOD understands it cannot cause extensive damage without addressing its environmental wrongs. The DOD has become more sensitive to environmental concerns and has worked to preserve the health of the environment by regularly contributing funds and resources to clean up after itself, as well as developing habitat-conservation and species-protection projects.<sup>29</sup> Despite these efforts there are still considerable problems the DOD must address in order to meet the demands of a less tolerant public that would like to see more emphasis on environmental protection.<sup>30</sup> For instance, in 2003, while the DOD had cleaned up over 19,000 sites contaminated by hazardous waste, there were still almost 9,000 severely contaminated sites remaining.<sup>31</sup>

One area where the DOD is seeking to reduce its impact, while simultaneously creating a militaristic advantage, is climate change.<sup>32</sup> There are several reports that posit climate change as a national security risk resulting from vast ecological transformations, such as rising temperature and sea levels, for which the DOD should be prepared.<sup>33</sup> These reports are *National Security and the Threat of Climate Change*, prepared by the Center for Naval Analysis Corporation (CNA),<sup>34</sup> *Transforming the Way DOD Looks at Energy, An Approach to Establishing an Energy Strategy*, prepared by LMI Corporation,<sup>35</sup> and the DOD's 2010 Quadrennial Defense Review.<sup>36</sup> Along with

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<sup>28</sup> *Id.*

<sup>29</sup> See BEARDEN, *supra* note 20.

<sup>30</sup> DYCUS, *supra* note 1, at 187.

<sup>31</sup> See BEARDEN, *supra* note 20.

<sup>32</sup> DEPARTMENT OF DEFENSE, QUADRENNIAL DEFENSE REVIEW REPORT 84 (Feb. 2010), available at [www.defense.gov/qdr/images/QDR\\_as\\_of\\_12Feb10\\_1000.pdf](http://www.defense.gov/qdr/images/QDR_as_of_12Feb10_1000.pdf).

<sup>33</sup> *Id.*; CNA CORP., NATIONAL SECURITY AND THE THREAT OF CLIMATE CHANGE 1 (2007), available at [www.securityandclimate.cna.org/report/SecurityandClimate\\_Final.pdf](http://www.securityandclimate.cna.org/report/SecurityandClimate_Final.pdf); THOMAS D. CROWLEY ET AL., LMI, TRANSFORMING THE WAY DOD LOOKS AT ENERGY, AN APPROACH TO ESTABLISHING AN ENERGY STRATEGY, available at [www.myclearwatchexperience.com/pvp/Energy%20Reports/2007%20April%20DoD%20Energy%20Report.pdf](http://www.myclearwatchexperience.com/pvp/Energy%20Reports/2007%20April%20DoD%20Energy%20Report.pdf).

<sup>34</sup> The Center for Naval Analysis Corporation (CNA) is a 501(c)(3) nonprofit corporation with headquarters in Alexandria, Virginia. CNA Corp., About Us, [www.cna.org/about](http://www.cna.org/about) (last visited Oct. 31, 2010). CNA operates the Center for Naval Analyses, which is a federally funded research and development center serving the U.S. Department of the Navy. CNA also provides analytical support to other agencies such as the U.S. Department of Health and Human Services and the U.S. Department of Education. CNA Corp., Center for Naval Analyses, [www.cna.org/about/whowear](http://www.cna.org/about/whowear) (last visited Oct. 31, 2010).

<sup>35</sup> LMI is a 501(c)(3) nonprofit corporation with headquarters in McLean, Virginia. It provides logistical, information management, asset management, organizational improvement, and resource management support to the DOD and other federal agencies. LMI, About LMI, [www.lmi.org/About-LMI/Overview.aspx](http://www.lmi.org/About-LMI/Overview.aspx) (last visited Oct. 31, 2010).

<sup>36</sup> DEPARTMENT OF DEFENSE, *supra* note 32.

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encouraging preparation to deal with the effects of climate change, the report authors and the DOD recognize an opportunity to undertake large-scale energy efficiency initiatives aimed at reducing the military's energy demand and subsequently its greenhouse gas emissions.<sup>37</sup> An energy transformation led by the DOD could have an enormous impact on the total energy demand of the United States, a substantial contributor of greenhouse gas (GHG) emissions,<sup>38</sup> and thus could potentially reduce the effects of climate change in the future.

Part I of this discussion will begin with background information on the United States military's contribution to GHG emissions and climate change. It will also look at some examples of exemptions the military has received from federal environmental laws, particularly during times of conflict. Next, it will focus on energy efficiency standards and exemptions, some of which the military has stated it will comply with voluntarily. Part II of this discussion will then survey some of the ways the military has begun to meet energy efficiency standards, including renewable fuel programs and solar installations. That Part will look at these efforts in the context of the military's historically poor record of environmental practices and will highlight the paradoxical nature of military sustainability. Additionally, it will identify difficulties of ensuring that the military stay focused on energy efficiency. Finally, Part III will make recommendations on how military energy transformation can be better organized and how the public can ensure military adherence to its promises.

## II. THE UNITED STATES MILITARY AND THE ENVIRONMENT

### A. DOD IMPACT ON CLIMATE CHANGE

The United States military is the single largest consumer of fuel in the world.<sup>39</sup> As a result, it has impaired the atmosphere considerably through GHG emissions, which is possibly the DOD's most significant contribution to the planet's ecological destabilization.<sup>40</sup> In 2007, at the

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<sup>37</sup> *Id.*; CNA CORP., *supra* note 33; CROWLEY ET AL., *supra* note 33.

<sup>38</sup> EPA, INVENTORY OF GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2008 (Apr. 15, 2010), available at [www.epa.gov/climatechange/emissions/downloads10/US-GHG-Inventory-2010\\_Report.pdf](http://www.epa.gov/climatechange/emissions/downloads10/US-GHG-Inventory-2010_Report.pdf).

<sup>39</sup> Peter Hoy, *The World's Biggest Fuel Consumer*, FORBES, June 5, 2008, [www.forbes.com/2008/06/05/mileage-military-vehicles-tech-logistics08-cz\\_ph\\_0605fuel.html](http://www.forbes.com/2008/06/05/mileage-military-vehicles-tech-logistics08-cz_ph_0605fuel.html).

<sup>40</sup> See Adam J. Liska & Richard K. Perrin, *Securing Foreign Oil: A Case for Including Military Operations in the Climate Change Impact of Fuels*, ENVIRONMENT MAGAZINE, July-Aug.

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height of the Iraq and Afghanistan wars, usage was up to sixteen gallons of fuel a day per soldier, which is about three million dollars worth of fuel per day.<sup>41</sup> Those numbers are a major increase from one gallon of fuel a day per soldier during World War II, or even the four gallons of fuel a day during Desert Storm.<sup>42</sup>

The military uses about 100 million barrels of oil per year, which is enough to fuel 1,000 cars to drive around the world 4,620 times.<sup>43</sup> At one point, the Army went through forty million gallons of fuel during just three weeks of combat in Iraq.<sup>44</sup> That is almost two million gallons per day, the total combined amount of gasoline used by the Allied armies during World War I.<sup>45</sup> Ninety-four percent of this energy is used for “mobility energy,” or the energy required for training, moving, and sustaining forces, weapons, and equipment for military operations around the world.<sup>46</sup> Even without the Iraq and Afghanistan wars, the DOD would still be the largest oil-consuming governmental entity in the world.<sup>47</sup> Approximately 70% of fuel used by the DOD is jet fuel, making the Air Force the largest fossil-fuel-consuming branch in the military.<sup>48</sup>

These estimates do not even include the amount of fuel consumption by military contractors. The military increasingly relies on private contractors in the wars in Iraq and Afghanistan.<sup>49</sup> The DOD spends billions of dollars each year on contractors, which provide services such as base support, construction, security, training local security forces, and transportation. Contractors are estimated to make up 40-60% of the workforce in recent operations.<sup>50</sup> Because of the strong presence of private contractors, there is potential for massive amounts of

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2010, available at [www.environmentmagazine.org/Archives/Back%20Issues/July-August%202010/securing-foreign-oil-full.html](http://www.environmentmagazine.org/Archives/Back%20Issues/July-August%202010/securing-foreign-oil-full.html). Climate change is caused by greenhouse gases in the atmosphere and has caused visible environmental changes on the planet, including shifting weather patterns, melting ice caps, and rising sea levels. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: SYNTHESIS REPORT 2 (2007), available at [www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4\\_syr\\_spm.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf).

<sup>41</sup> *Id.*

<sup>42</sup> *Id.*

<sup>43</sup> Steve Martinot, *Militarism and Global Warming*, SYNTHESIS/REGENERATION 42 (Winter 2007), available at [www.greens.org/s-r/42/42-06.html](http://www.greens.org/s-r/42/42-06.html).

<sup>44</sup> *Id.*

<sup>45</sup> *Id.*

<sup>46</sup> CROWLEY ET AL., *supra* note 33, at A-1.

<sup>47</sup> Martinot, *supra* note 43, at 42.

<sup>48</sup> Hoy, *supra* note 39.

<sup>49</sup> MOSHE SCHWARTZ, CONG. RESEARCH SERV., DEPARTMENT OF DEFENSE CONTRACTORS IN IRAQ AND AFGHANISTAN: BACKGROUND AND ANALYSIS 5 (July 2, 2010), available at [www.fas.org/sgp/crs/natsec/R40764.pdf](http://www.fas.org/sgp/crs/natsec/R40764.pdf).

<sup>50</sup> *Id.* at 6.

fuel use in that sector of military operations.

In 2008, the United States Energy Information Agency (EIA) reported that the total conventional energy use by the military was 889 trillion British thermal units (Btu) for the year.<sup>51</sup> Most of that energy came from the use of petroleum products.<sup>52</sup> Scientists calculated that carbon dioxide emissions from the military's total energy use as reported by the EIA amounted to 85 million metric tons (MMt) plus an additional 87 MMt from "manufacturing of materials, equipment, military infrastructure, vehicles, and munitions."<sup>53</sup> Therefore, total military carbon dioxide emissions are approximately 1.5% of total United States emissions, which was calculated at 5,839 MMt of carbon dioxide emissions in 2008 by the Department of Energy (DOE).<sup>54</sup>

Carbon dioxide, along with other GHGs such as nitrous oxide, methane, sulfur hexafluoride, hydro-fluorocarbons, and per-fluorocarbons, causes global climate change.<sup>55</sup> The impacts of such a drastic destabilization of the earth's climate are increasingly visible.<sup>56</sup> Almost all of the world's glaciers are melting, the oceans are becoming warmer and more acidic, and animal ranges are shifting.<sup>57</sup> According to the Intergovernmental Panel on Climate Change, "global average sea level rose at an average rate of 1.8 [1.3 to 2.3] mm per year over 1961 to 2003 and at an average rate of about 3.1 [2.4 to 3.8] mm per year from 1993 to 2003."<sup>58</sup>

Climate change has created extreme weather-pattern changes both in frequency and intensity over the last fifty years.<sup>59</sup> Frosts have become less frequent over most land areas, while hot days and hot nights have become more frequent; heat waves have become more frequent over most land areas; the frequency of heavy precipitation events (or

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<sup>51</sup> Liska & Perrin, *supra* note 40. One Btu is defined as the amount of heat energy required to raise the temperature of one pound of water by one degree Fahrenheit. It is also the amount of heat energy given off by one pound of water when it cools by one degree Fahrenheit. One Btu is roughly the equivalent of the energy released by the burning of a wooden match and is the same as 1,055 joules. ROBERT A. RISTINEN & JACK J. KRAUSHAAR, *ENERGY AND THE ENVIRONMENT* 13 (John Wiley & Sons, Inc. 2d ed. 2006).

<sup>52</sup> Liska & Perrin, *supra* note 40.

<sup>53</sup> *Id.*

<sup>54</sup> U.S. Energy Information Administration, Department of Energy, [www.eia.doe.gov/oiaf/1605/ggrpt/index.html#total](http://www.eia.doe.gov/oiaf/1605/ggrpt/index.html#total).

<sup>55</sup> EPA, *Greenhouse Gas Emissions* (July 14, 2010), [www.epa.gov/climatechange/emissions/index.html](http://www.epa.gov/climatechange/emissions/index.html).

<sup>56</sup> INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra* note 40, at 2.

<sup>57</sup> *Id.*

<sup>58</sup> *Id.*

<sup>59</sup> *Id.*

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proportion of total rainfall from heavy falls) has increased over most areas; and the incidence of extreme high sea level has increased at a broad range of sites worldwide since 1975.<sup>60</sup> The military is a significant contributor to climate change, and the effects of climate change will prove to be substantially more difficult to deal with than past visible harms such as hazardous waste sites. This is because, as the DOD has acknowledged, the large-scale physical changes on the earth and in the atmosphere are already being observed on a global level.<sup>61</sup>

The debate over balancing national security concerns with environmental protection has never been so important, as international concerns over climate change have reached a feverish pitch. These concerns have been recognized by military leaders who, in 2007, issued the *National Security and the Threat of Climate Change* report.<sup>62</sup> The report was prepared by the CNA, a nonprofit national security analysis organization, in order to inform United States policymakers and the military about the threat of climate change.<sup>63</sup> CNA convened a “Military Advisory Board” comprising several retired senior military officers and national security experts to assist in compiling and analyzing all of the data.<sup>64</sup> Upon analyzing the climate-change issue, CNA and the Military Advisory Board determined that the “nature and pace of climate change being observed today and the consequences projected by the consensus scientific opinion are grave and pose equally grave implications for our national security.”<sup>65</sup>

The report was unprecedented, because the idea that an environmental problem is also a national security risk is a novel but important declaration considering the past conflict between environmental concerns and national security. The implications of such a report are vast and could result in the greatest clean-up effort by the military to date in the form of alternative energy development.

## B. LEGAL CONSIDERATIONS

The DOD has been shielded from full accountability for its environmental offenses due to numerous military exemptions from federal environmental laws on the basis of national security.<sup>66</sup> In making

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<sup>60</sup> *Id.*

<sup>61</sup> DEPARTMENT OF DEFENSE, *supra* note 32, at 84-85.

<sup>62</sup> CNA CORP., *supra* note 33.

<sup>63</sup> *Id.* at 9.

<sup>64</sup> *Id.*

<sup>65</sup> *Id.* at 1.

<sup>66</sup> Martha Townsend, *Military Exemptions from Environmental Laws*, 19-SPG NAT.

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the case for exemptions, the military argues that preparedness does not fall within the kind of recurring agency activities for which the environmental law was intended, and consequently, the law should account for special circumstances such as wartime operations.<sup>67</sup> This sense of urgency and concern over national security has become widespread following the events of September 11 and the invasion of Iraq.<sup>68</sup> Even though independent evaluations by the General Accounting Office (now called the Government Accountability Office, or GAO) found little evidence that environmental laws have impeded the military's ability to train its soldiers, the DOD still pursued broader exemptions beginning in 2003.<sup>69</sup> Exemptions are mostly given on a case-by-case basis where the President grants an exemption for activities in the "paramount interest of the United States."<sup>70</sup> Some exemptions are specifically granted for purposes of national security, and they are usually limited to a specific time frame but can be extended.<sup>71</sup> For example, the exemption provision in the Comprehensive Environmental Response, Compensation, and Liability Act states:

The President may issue such orders regarding response actions at any specified site or facility of the Department of Energy or the Department of Defense as may be necessary to protect the national security interests of the United States at that site or facility. Such orders may include, where necessary to protect such interests, an exemption from any requirement contained in this title or under title III of the Superfund Amendments and Reauthorization Act of 1986 with respect to the site or facility concerned. . . . An exemption under this paragraph shall be for a specified period which may not exceed one year. . . .<sup>72</sup>

Other laws that allow for exemptions for national security purposes include the following: Clean Air Act, Clean Water Act, Noise Control Act, Solid Waste Disposal Act, Safe Water Drinking Act, and Endangered Species Act (ESA).<sup>73</sup> Following requests by the DOD in

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RESOURCES & ENV'T 65 (2005).

<sup>67</sup> *Id.* at 65.

<sup>68</sup> BEARDEN, *supra* note 27, at 1; Townsend, *supra* note 66, at 65.

<sup>69</sup> Barry W. Holman, Director, GAO 03-621T, Defense Infrastructure Issues with the GAO, Testimony before the U.S. Senate Committee on Environment and Public Works (Apr. 2, 2003), available at [www.gao.gov/new.items/d03621t.pdf](http://www.gao.gov/new.items/d03621t.pdf).

<sup>70</sup> BEARDEN, *supra* note 27, at 1.

<sup>71</sup> *Id.*

<sup>72</sup> 42 U.S.C.A. § 9620(j)(1) (Westlaw 2011).

<sup>73</sup> *Id.*

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2003, Congress enacted more exemptions from the Migratory Bird Treaty Act, the Marine Mammal Protection Act and even broader exemptions from parts of the ESA.<sup>74</sup> In one example of special treatment for the DOD, Congress enacted legislation in 1986 that allowed the Secretary of Defense to authorize the taking of up to twenty-five marine mammals each year for “national defense purposes” without a permit under the Marine Mammal Protection Act.<sup>75</sup> Support for exemptions can also be found in judicial decisions. For instance, when the Navy violated the Clean Water Act by dropping ordnance into the ocean without the proper permit at a target practice range in Puerto Rico, the Supreme Court allowed the violation to continue while the Navy applied for a permit.<sup>76</sup> The Navy had argued that this was necessary to preserve the general welfare of the country.<sup>77</sup>

There are also several energy laws that apply to the DOD but contain exemptions for military fleets.<sup>78</sup> In 2005, the DOD was responsible for using 90% of the federal government’s overall petroleum consumption.<sup>79</sup> Ninety-four percent of that petroleum was used by military mobility forces.<sup>80</sup> Mobility energy, as opposed to stationary facility energy, is used to power weapons platforms, tactical equipment, and all other types of vehicles, including ships and aircraft.<sup>81</sup> The Energy Policy Act of 1992 (EPA 1992) created a comprehensive energy policy that established specific energy goals, including a 25% reduction in facility energy usage by fiscal year 2000.<sup>82</sup> The EPA 1992 also set minimum federal fleet requirements for the acquisition of alternative-fueled vehicles (sometimes called AFV) by federal agencies.<sup>83</sup> The

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<sup>74</sup> *Id.*

<sup>75</sup> 10 U.S.C.A. § 7524 (Westlaw 2011); DYCUS, *supra* note 1, at 33.

<sup>76</sup> Weinberger v. Romero-Barcelo, 456 U.S. 305, 310 (1982).

<sup>77</sup> *Id.* at 310.

<sup>78</sup> CROWLEY ET AL., *supra* note 33, at 4-6.

<sup>79</sup> *Id.* at 2-4.

<sup>80</sup> *Id.* at A-1. “Mobility forces comprise the airlift and sealift forces that transport military personnel and materiel throughout the world.” Department of Defense, Mobility Forces, [www.dod.mil/execsec/adr95/mobilty5.html](http://www.dod.mil/execsec/adr95/mobilty5.html).

<sup>81</sup> CROWLEY ET AL., *supra* note 33, at 2-5.

<sup>82</sup> *Id.* at C-1. A fiscal year is the accounting period of the federal government.

<sup>83</sup> 42 U.S.C.A § 13212 (Westlaw 2011). A “federal fleet” is defined in the statute as

“20 or more light duty motor vehicles, located in a metropolitan statistical area or consolidated metropolitan statistical area, as established by the Bureau of the Census, with a 1980 population of more than 250,000, that are centrally fueled or capable of being centrally fueled and are owned, operated, leased, or otherwise controlled by or assigned to any Federal executive department, military department, Government corporation, independent establishment, or executive agency, the United States Postal Service, the Congress, the courts of the United States, or the Executive Office of the President.” *Id.* § 13212(b)(3).

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statute specifically exempts “motor vehicles acquired and used for military purposes” for “national security reasons.”<sup>84</sup> The same EPAct 1992 exemptions for military fleets carry over to the alternative-fuel-use amendments of the Energy Policy Act of 2005 (EPAct 2005).<sup>85</sup> EPAct 2005 established new energy efficiency standards and mandated doubling biofuel use in the United States, but these standards do not apply to vehicles used for military purposes.<sup>86</sup>

Along with the alternative-energy requirements of EPAct 1992 and 2005, Executive Order 13423 (EO 13423), titled “Strengthening Federal Environmental, Energy, and Transportation Management,” sets further energy-efficiency standards for the federal government.<sup>87</sup> Issued by President Bush in 2007, EO 13423 requires federal agencies to reduce a fleet’s petroleum consumption by 2% annually through the end of 2015.<sup>88</sup> It also mandated an increase in alternative-fuel use by at least 10% compounded annually through the end of 2015.<sup>89</sup> Overall, EO 13423 requires the federal government to reduce GHG emissions by 30% by 2015.<sup>90</sup> Like the other environmental laws, EO 13423 contains an express exemption for military tactical fleets.<sup>91</sup>

Similarly, in October 2009, President Obama issued Executive Order 13514 (EO 13514) to further strengthen energy efficiency within the federal government.<sup>92</sup> EO 13514, titled “Federal Leadership in Environmental, Energy, and Economic Performance,” requires federal agencies yet again to decrease GHG emissions by reducing federal fleet petroleum consumption by a minimum of 2% annually through the end of fiscal year 2020.<sup>93</sup> It did not revoke any of the provisions of EO 13423 and retains the exemption for military tactical fleets.<sup>94</sup> Furthermore, the order provides exemptions for any agency when it is in the “interest of national security,”<sup>95</sup> a term with the potential to be broadly interpreted

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<sup>84</sup> 42 U.S.C.A. § 13212(b)(3)(E) (Westlaw 2011).

<sup>85</sup> 42 U.S.C.A. § 6374 (Westlaw 2011).

<sup>86</sup> CROWLEY ET AL., *supra* note 33, at C-1; 42 U.S.C. § 13211(9)(f) (Westlaw 2011).

<sup>87</sup> Exec. Order No. 13,423, 72 Fed. Reg. 3919 (Jan. 24, 2007).

<sup>88</sup> *Id.*

<sup>89</sup> *Id.*

<sup>90</sup> *Id.*

<sup>91</sup> *Id.* at 3922 (“The head of an agency may exempt . . . military tactical vehicle fleets of that agency from the provisions of this order . . .”).

<sup>92</sup> Exec. Order No. 13,514, 74 Fed. Reg. 52,117 (Oct. 5, 2009).

<sup>93</sup> *Id.* at 52,118.

<sup>94</sup> *Id.* at 52,125 (“The head of an agency may exempt . . . military tactical vehicle fleets of that agency from the provisions of this order . . .”).

<sup>95</sup> *Id.* (“The head of an agency may exempt particular agency activities and facilities from the provisions of this order . . . where it is in the interest of national security . . . . To the maximum

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against environmental interests, particularly in times of military conflict.<sup>96</sup>

Along with military vehicles, there are also avenues for exempting aircraft emissions from energy standards. The Clean Air Act grants the Environmental Protection Agency (EPA) authority to mandate aircraft emission standards.<sup>97</sup> Military aircraft have traditionally been exempt from the EPA's emission standards, but during the late 1990's the EPA began to consider the possibility of including the military in those standards.<sup>98</sup> However, recent aircraft emissions standards issued by the EPA regulate Federal Aviation Administration (FAA) and FAA-contracted facilities but do not apply to military bases.<sup>99</sup> Further, these emissions standards do not apply to military aircraft, except in a few cases in which the military aircraft use commercial engines subject to the standards.<sup>100</sup> As the largest DOD consumer of fuel, the Air Force uses millions of gallons of fuel every day.<sup>101</sup> Thus, the EPA emission standards are leaving out a major source of GHG emissions.

Pursuant to the EPA's 1992 and 2005 and Executive Orders 13423 and 13514, federal agencies must track their compliance activity by collecting vehicle acquisition, inventory, and fuel-use data from their non-exempt fleets. These agencies must then report this information to the DOE.<sup>102</sup> Each agency is also required to submit an annual report describing its compliance with the EPA's and progress made toward the goals outlined in EO 13423.<sup>103</sup>

Although the military is exempt from compliance with vehicle and aircraft emissions standards, there are signs that the DOD is willing to comply with those standards voluntarily. For instance, in September 2010, the DOD announced plans to reduce fossil-fuel consumption in

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extent practicable, and without compromising national security, each agency shall strive to comply with the purposes, goals, and implementation steps in this order.”)

<sup>96</sup> See *Winter v. Natural Res. Def. Council, Inc.*, 555 U.S. 7, 129 S. Ct. 365 (2008).

<sup>97</sup> 42 U.S.C.A. § 7571 (Westlaw 2011).

<sup>98</sup> CONTROL OF AIR POLLUTION FROM AIRCRAFT AND AIRCRAFT EMISSIONS, ENVIRONMENTAL PROTECTION AGENCY, 20 (1997), available at [www.epa.gov/nonroad/aviation/airrsd.pdf](http://www.epa.gov/nonroad/aviation/airrsd.pdf).

<sup>99</sup> New Emission Standards for New Commercial Aircraft Engines, 70 Fed. Reg. 69,664, 69,668 (Nov. 17, 2005).

<sup>100</sup> *Id.* at 69,674.

<sup>101</sup> CROWLEY ET AL., *supra* note 33, at 1-1.

<sup>102</sup> Federal Fleet Management Program, Department of Energy (July 2008), [www1.eere.energy.gov/femp/pdfs/43500.pdf](http://www1.eere.energy.gov/femp/pdfs/43500.pdf). Agencies report using the Federal Automotive Statistical Tool, an online tracking system accessible at [www.fastweb.inel.gov](http://www.fastweb.inel.gov).

<sup>103</sup> *Id.* This report is due to Congress by February 15 of each year and must be published on the agency's Web site. See [www.eere.energy.gov/femp/about/annual\\_reports.html](http://www.eere.energy.gov/femp/about/annual_reports.html).

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compliance with EO 31514.<sup>104</sup> The announcement does not specify whether the focus will be on fleets rather than non-exempt stationary facilities, but it claims an overall GHG emission reduction. This should include mobility forces, since they consume the most fuel within the DOD.<sup>105</sup> Voluntary compliance with environmental regulations offers more flexibility than mandatory compliance.<sup>106</sup> However, as explored in Part III, it is unlikely that voluntary compliance actually achieves a particular goal like pollution control as efficiently as mandatory regulations.

## III. SURVEY OF DOD ENERGY EFFICIENCY EFFORT

## A. MILITARY SUSTAINABILITY

In 2007, amidst public concern over the effects of climate change, two reports were released that addressed climate change as a national security risk.<sup>107</sup> Three years later, the DOD also released a report identifying climate change as a global problem with the potential to affect the security landscape.<sup>108</sup> The reports accept mainstream scientific data supporting the position that the “warming of the climate system is unequivocal” and likely to result in major changes in the Earth’s weather patterns.<sup>109</sup> With the possibility of resulting famines, floods and other disasters, the loss of ecological and civil stability is the primary threat to national security posed by climate change.<sup>110</sup>

LMI, a government consulting firm, was asked by the DOD Office of Force Transformation and Resources to develop an approach to establish a DOD energy strategy that, among other goals, reduces reliance on foreign oil.<sup>111</sup> The LMI report identifies a disconnect between military energy consumption practices and rising concern for climate

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<sup>104</sup> Lisa Daniels, *Department to Reduce Fuel, Water Consumption*, AMERICAN FORCES PRESS SERVICE (Sept. 13, 2010), available at [www.defense.gov/news/newsarticle.aspx?id=60830](http://www.defense.gov/news/newsarticle.aspx?id=60830).

<sup>105</sup> *Id.*

<sup>106</sup> MADHU KHANNA & LISA DAMON, EPA’S VOLUNTARY 33/50 PROGRAM: IMPACT ON TOXIC RELEASES AND ECONOMIC PERFORMANCE OF FIRMS 2, [siti.feem.it/gnee/pap-abs/damon.pdf](http://siti.feem.it/gnee/pap-abs/damon.pdf).

<sup>107</sup> CROWLEY ET AL., *supra* note 33; CNA CORP., *supra* note 33.

<sup>108</sup> DEPARTMENT OF DEFENSE, *supra* note 32.

<sup>109</sup> Committee on Science and Technology, *Observations of Climate Change: The 2007 IPCC Assessment 2* (Feb. 8, 2007), [democrats.science.house.gov/Media/File/Commdocs/hearings/2007/ull/08feb/trenberth\\_testimony.pdf](http://democrats.science.house.gov/Media/File/Commdocs/hearings/2007/ull/08feb/trenberth_testimony.pdf).

<sup>110</sup> James Stuhltrager, *Global Climate Change and National Security*, 22-WTR NAT. RESOURCES & ENV’T 36, 36 (2008).

<sup>111</sup> CROWLEY ET AL., *supra* note 33, at D-2.

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change. It also calls on the DOD to make energy research and development a top priority.<sup>112</sup> LMI concludes that in order to reduce reliance on fossil fuels, the DOD needs to “incorporate energy considerations into the department’s key corporate processes” and establish a “corporate governance structure with policy and resource oversight” that focuses on energy consumption. Lastly, the report recommends “a structured framework to address energy efficiency, including alternate energy sources, to the department’s greatest energy challenges—those areas consuming the most fuel, requiring the most logistics support, or having the most negative impact on the warrior.”<sup>113</sup> LMI further suggests an application of EO 13423 to mobility forces, which, as previously explained, are currently exempt from EPA compliance.<sup>114</sup>

Another report, issued by CNA, analyzed the threat of climate change in the context of national security and was signed by eleven retired high-ranking general officers.<sup>115</sup> Like the LMI report, this report identifies the destabilizing impacts of climate change – including reduced access to fresh water, impaired food production, health catastrophes, land loss, flooding, and mass migrations – as serious concerns.<sup>116</sup> The report details how these concerns will eventually affect national security in the United States and the rest of the world. It links dependence on foreign oil to the country’s wartime vulnerability and points to clean energy alternatives as an important aid in confronting climate change.<sup>117</sup> The report makes the following recommendations:

The national security consequences of climate change should be fully integrated into national security and national defense strategies. The U.S. should commit to a stronger national and international role to help stabilize climate changes at levels that will avoid significant disruption to global security and stability. The Department of Defense should enhance its operational capability by accelerating the adoption of improved business processes and innovative technologies that result in improved U.S. combat power through energy efficiency.<sup>118</sup>

As to the last recommendation, the report emphasizes the

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<sup>112</sup> *Id.* at 7-4.

<sup>113</sup> *Id.* at iv.

<sup>114</sup> *Id.* at 7-2.

<sup>115</sup> CNA CORP., *supra* note 33.

<sup>116</sup> CROWLEY ET AL., *supra* note 33, at 2-1- 2-4.

<sup>117</sup> *Id.* at 5-3.

<sup>118</sup> *Id.* at 5-4 – 5-6.

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importance of efficient technology that not only decreases the DOD's fuel usage but also reduces GHG emissions overall.<sup>119</sup>

In February 2010, three years after the CNA report, the DOD released the important Quadrennial Defense Review (QDR), which is a study mandated by Congress and prepared by the DOD. The QDR provides information on military strategies and threats to the extent that the information can be released to the public.<sup>120</sup> The 2010 QDR assesses the current security climate and identifies major challenges to the DOD and any necessary changes in the "composition of the force."<sup>121</sup> It addresses the capabilities of the military and discusses how those capabilities will be used to protect the country. It is the first QDR to highlight climate change as a national security risk.<sup>122</sup> Assessment of climate change was appropriate given general public concern, but it was also mandated by the National Defense Authorization Act enacted in January 2008.<sup>123</sup> The Act required the next QDR after enactment to "examine the capabilities of the armed forces to respond to the consequences of climate change, in particular, preparedness for natural disasters from extreme weather events and other missions the armed forces may be asked to support inside the United States and overseas."<sup>124</sup>

The QDR emphasizes that the DOD "is developing policies and plans to manage the effects of climate change on its operating environment, missions, and facilities" and is "incorporating geostrategic and operational energy considerations into force planning, requirements development, and acquisition processes."<sup>125</sup> In other words, the DOD is working to change energy policies that contribute to climate change while simultaneously preparing for its effects. The report conveys a concern over the potential geopolitical impacts of climate change and discusses the DOD's initiatives to work with other countries by "building trust" and "sharing best practices on installations management and operations" in order to increase response capacity.<sup>126</sup>

Importantly, the QDR discusses employing the Strategic

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<sup>119</sup> *Id.* at 5-6.

<sup>120</sup> STEPHEN DAGGETT, CONG. RESEARCH SERV., QUADRENNIAL DEFENSE REVIEW 2010: OVERVIEW AND IMPLICATIONS FOR NATIONAL SECURITY PLANNING 2 (May 17, 2010), available at [www.fas.org/sgp/crs/natsec/R41250.pdf](http://www.fas.org/sgp/crs/natsec/R41250.pdf).

<sup>121</sup> *Id.* at 3.

<sup>122</sup> QDR's are completed every four years. Four QDRs were completed in 1997, 2001, 2006, and 2010. See DEPARTMENT OF DEFENSE, *supra* note 32.

<sup>123</sup> See 10 U.S.C.A. § 118(g)(2) (Westlaw 2011). This statute has been amended as National Defense Authorization bills are passed each year.

<sup>124</sup> *Id.*

<sup>125</sup> DEPARTMENT OF DEFENSE, *supra* note 32, at XV.

<sup>126</sup> *Id.* at 85.

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Environmental Research and Development Program,<sup>127</sup> which is a joint effort among the DOD, the DOE, and the EPA to develop climate-change assessment tools.<sup>128</sup> Along with large-scale energy cutbacks, the QDR highlights smaller-scale energy efficiency and renewable-energy projects currently administered by the DOD.<sup>129</sup> This includes solar installations at military bases and other projects intended to reduce fuel consumption by individual soldiers.

## B. EXECUTING GREEN PHASE

Immediately following the events of September 11, the political climate was not conducive to preserving environmental health when it would interfere with readiness training for troops during wartime.<sup>130</sup> During this time, the DOD made multiple attempts to escape from the purview of federal environmental regulations.<sup>131</sup> These attempts were explained in 2003 by former Defense Secretary Donald Rumsfeld as simply a way to “clarify environmental statutes which restrict access to, and sustainment of, training and test ranges essential for the readiness of our troops and the effectiveness of our weapons systems in the global war on terror.”<sup>132</sup> Many, even the Supreme Court, shared the position that national security trumps environmental protection.<sup>133</sup> However, as the high-profile wars in Iraq and Afghanistan began to fade from mainstream attention, the DOD began contributing more to a public discussion on energy efficiency and various environmental problems such as climate change. Journalists, politicians, and people within the military structure itself, such as the Military Advisory Board in the CNA report, started discussing major changes in the DOD’s current energy policies.<sup>134</sup> Mainstream media have started to pick up on the transition,

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<sup>127</sup> The Strategic Environmental Research and Development Program is an environmental science and technology program led by the DOD in partnership with the Department of Energy and the EPA, which seeks to harness the “latest science and technology to improve DOD’s environmental performance, reduce costs, and enhance and sustain mission capabilities.” SERDP-ESTCP, About SERDP-ESTCP, [www.serdp-estcp.org/About-SERDP-and-ESTCP](http://www.serdp-estcp.org/About-SERDP-and-ESTCP) (last visited Oct. 31, 2010).

<sup>128</sup> DEPARTMENT OF DEFENSE, *supra* note 32, at 86.

<sup>129</sup> *Id.*

<sup>130</sup> Charles Pope, *Military Doesn’t Want to Go Green*, SEATTLE P-I (Mar. 13, 2003), [www.seattlepi.com/national/112242\\_pentagonxx13.shtml](http://www.seattlepi.com/national/112242_pentagonxx13.shtml).

<sup>131</sup> *Id.*

<sup>132</sup> *Id.*

<sup>133</sup> *Winter v. Natural Res. Def. Council, Inc.*, 555 U.S. 7, 129 S. Ct. 365, 381 (2008).

<sup>134</sup> John Lorinc, *Addressing the Military’s Energy Inefficiency*, GREEN BLOG NEW YORK TIMES (May 19, 2009, 5:00 PM), [www.green.blogs.nytimes.com/2009/05/19/addressing-the-militarys-energy-efficiency/](http://www.green.blogs.nytimes.com/2009/05/19/addressing-the-militarys-energy-efficiency/).

particularly in light of insurgent attacks on fuel-supply convoys in Afghanistan, where fuel is the number one DOD import.<sup>135</sup> Companies in the United States are being contracted to supply the troops with solar power equipment, including portable solar panels, solar chargers for electronic equipment, and other renewable technology.<sup>136</sup> Members of the military are hopeful that less dependence on fossil fuels will provide a safer atmosphere for soldiers by reducing the number of truck convoys that haul fuel to bases, thus reducing the number of attacks.<sup>137</sup>

Besides providing assistance with alternative-energy projects for troops, the DOD's newfound interest in better funding for energy research and development is evident through solar installations, electric-vehicle purchases, and development of renewable fuel.<sup>138</sup> For example, the Army recently announced plans to develop smart microgrid technology,<sup>139</sup> which "can draw energy interchangeably from solar arrays and other sources to cut costs, improve logistics, and reduce troop safety risks involved in fossil fuel convoys."<sup>140</sup> These microgrids could potentially cut fuel consumption at an Army base by up to sixty percent.<sup>141</sup> The Air Force is also pursuing energy efficiency through the development of jet biofuel and has plans to certify its entire fleet to run on biofuels by 2011.<sup>142</sup> It is already running test flights with 50% biofuel

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<sup>135</sup> Elisabeth Rosenthal, *U.S. Military Orders Less Dependence on Fossil Fuels*, N.Y. TIMES, Oct. 5, 2010 at A1.

<sup>136</sup> *Id.*

<sup>137</sup> *Id.*

<sup>138</sup> Lorinc, *supra* note 134.

<sup>139</sup> Tina Casey, *U.S. Military is Developing Smart Microgrids with Solar Power*, CLEAN TECHNICA (June 18, 2010), [www.cleantechnica.com/2010/06/18/u-s-military-is-developing-smart-microgrids-with-solar-power](http://www.cleantechnica.com/2010/06/18/u-s-military-is-developing-smart-microgrids-with-solar-power).

"A microgrid is a small-scale power supply network, designed to provide power to a few buildings or a small community. Microgrids bear the promise of substantial environmental benefits, brought about by higher energy efficiency and by facilitating the integration of renewable sources such as photovoltaic arrays or wind turbines. By virtue of a good match between generation and load, microgrids have a low impact on the electricity network, despite a potentially significant level of generation by intermittent energy sources." *Microgrid Technology to Become Competitive as the Price of Fossil Fuels, of High Demand*, AGRICULTUREINFORMATION.COM (Jan. 31, 2009), [www.agricultureinformation.com/forums/blogs/bharatbook/857-microgrid-technology-become-competitive-price-fossil-fuels-high-dema.html](http://www.agricultureinformation.com/forums/blogs/bharatbook/857-microgrid-technology-become-competitive-price-fossil-fuels-high-dema.html).

<sup>140</sup> Casey, *supra* note 139.

<sup>141</sup> *Id.*

<sup>142</sup> Rosenthal, *supra* note 135; Tina Casey, *U.S. Navy Goes All Supersonic on Camelina Biofuel with "Green Hornet" Jet*, CLEAN TECHNICA (April 26, 2010), [gas2.org/2010/04/26/u-s-navy-goes-all-supersonic-on-camelina-biofuel-with-green-hornet-jet](http://gas2.org/2010/04/26/u-s-navy-goes-all-supersonic-on-camelina-biofuel-with-green-hornet-jet). Biofuels are produced from living organisms such as corn, grass, and algae or from metabolic by-products such as organic or food waste products. "In order to be considered a biofuel the fuel must contain over 80 % renewable

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mixtures.<sup>143</sup> Since a majority of the fuel used by the DOD goes to military aircraft,<sup>144</sup> this could have an enormous impact on fossil-fuel use and total carbon dioxide emissions. Although there is conflicting evidence on whether biofuel production results in higher or lower total emissions, there are other studies that show the use of biofuels could reduce GHG emissions overall, since they burn cleaner and the amount of energy needed in production is decreasing.<sup>145</sup>

Similarly, the Navy, which set a goal to have 50% of its power come from renewable sources by 2020, has been exploring the use of natural biocides to keep the hulls of ships clean.<sup>146</sup> Barnacles, algae and other marine biofilm, which cling to the hulls, can reduce a ship's fuel efficiency by up to 40%; therefore, keeping the hulls clean cuts down on the amount of operational fuel used in the military.<sup>147</sup> Not only does this particular project benefit the Navy in fuel and economic efficiency since other biocides are expensive, but it also protects sensitive marine life from the harmful chemical biocides that are normally used.<sup>148</sup>

Small, individualized projects have also proven extremely effective. According to Dan Nolan, author of the DOD Energy Blog, the single most effective program for reducing energy consumption has been spray foam insulation of temporary structures in Iraq and Afghanistan.<sup>149</sup> The spray foam project has proven to be not only energy efficient but financially beneficial as well, saving the military over 100 million dollars per year.<sup>150</sup> In addition to seeking reduction in fossil-fuel use generally, the military is also actively reducing GHG emissions through "contracted landfill disposal, increased teleworking and less air travel."<sup>151</sup> Government contractors have also developed web-based GHG

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materials." *Biofuels*, ALTERNATIVE ENERGY NEWS, [www.alternative-energy-news.info/technology/biofuels/](http://www.alternative-energy-news.info/technology/biofuels/) (last visited Apr. 10, 2011).

<sup>143</sup> Rosenthal, *supra* note 135.

<sup>144</sup> CROWLEY ET AL., *supra* note 33, at A-1.

<sup>145</sup> Elisabeth Rosenthal, *Biofuels Deemed a Greenhouse Threat*, NEW YORK TIMES (Feb. 8, 2008), [www.nytimes.com/2008/02/08/science/earth/08wbiofuels.html](http://www.nytimes.com/2008/02/08/science/earth/08wbiofuels.html); DOE, *Biofuels & Greenhouse Gas Emissions: Myths versus Facts*, DOE Website, [www.energy.gov/media/BiofuelsMythVFact.pdf](http://www.energy.gov/media/BiofuelsMythVFact.pdf) (last visited Feb. 13, 2011).

<sup>146</sup> Rosenthal, *supra* note 135; Tina Casey, *Go Navy! U.S. Ships to Try Eco-Safe Anti-Barnacle Tactics*, CLEAN TECHNICA (Aug. 8, 2009), available at [cleantechnica.com/2009/08/08/go-navy-us-ships-to-try-eco-safe-anti-barnacle-tactics/](http://cleantechnica.com/2009/08/08/go-navy-us-ships-to-try-eco-safe-anti-barnacle-tactics/).

<sup>147</sup> Casey, *supra* note 146.

<sup>148</sup> *Id.*

<sup>149</sup> Interview with Dan Nolan, DEP'T OF DEF. ENERGY BLOG (Nov. 29, 2010),

<sup>150</sup> *U.S. Forces Find Energy Efficiency Saves Lives*, EARTH NEWS, [www.earthportal.org/news/?p=2027](http://www.earthportal.org/news/?p=2027) (Dec. 18, 2008).

<sup>151</sup> Lisa Daniels, *Department to Reduce Fuel, Water Consumption*, AMERICAN FORCES PRESS SERVICE (Sept. 13, 2010), [www.defense.gov/news/newsarticle.aspx?id=60830](http://www.defense.gov/news/newsarticle.aspx?id=60830).

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inventories for Army installations that can be used to identify, quantify, and report emissions including carbon dioxide, nitrous oxide, methane, sulfur hexafluoride, hydro fluorocarbons, and per fluorocarbons.<sup>152</sup>

### C. AN ULTIMATE PARADOX

As the world's largest consumer of energy, the military has a long way to go if it intends to achieve energy efficiency goals set by the government and the DOD itself. However, not everyone is convinced that the military will follow through, considering its past environmental record.<sup>153</sup> This skepticism is valid in light of the growing impact climate change has had on the planet and the extent to which the military has contributed to GHG emissions.<sup>154</sup> In addition, mistrust of the DOD's environmental record is warranted, since environmental damage from military activities still exists all over the United States.<sup>155</sup>

The suspect attitude toward military greening is akin to an attitude held by many concerning corporate "environmentalism" in the form of "greenwashing."<sup>156</sup> The military is claiming to go "green," and is indeed making strides in energy efficiency, while simultaneously increasing oil use by 1.5% annually through 2017.<sup>157</sup> Also, efficiency programs are limited to base installations and are not applied to tactical fleets, where much of the DOD's fuel consumption occurs.<sup>158</sup> Furthermore, little is said in any of the aforementioned reports about the many exemptions the DOD sought from numerous environmental laws over the past eight years.<sup>159</sup> The military is accustomed to approaching environmental protection on its own terms and is giving mixed signals about how

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<sup>152</sup> National Defense Center for Energy and Environment, *The NDCEE Develops Greenhouse Gas Inventories for Army Installation*, NAT'L DEF. CTR. FOR ENERGY AND ENV'T NEWSL., [www.ndcee.ctc.com/newsletters/NDCEE-Newsletter\\_Winter-Spring\\_2009.pdf](http://www.ndcee.ctc.com/newsletters/NDCEE-Newsletter_Winter-Spring_2009.pdf).

<sup>153</sup> Bryan Farrell, *Green Camo: Seeing Through the Military's New Environmentalism*, BYRANFARRELL.COM (May 20, 2009), [www.bryanfarrell.com/archives/143](http://www.bryanfarrell.com/archives/143).

<sup>154</sup> Liska & Perrin, *supra* note 40.

<sup>155</sup> See BEARDEN, *supra* note 20.

<sup>156</sup> "Greenwashing" is a term applied to situations where a company or group claims to be environmentally conscious or that their products are sustainable, when in reality they are not as "green" as they claim. Jonathan D. Glater, "Greenwash": A Way to Say "Hogwash," N.Y. TIMES (May 17, 2006), [www.nytimes.com/2006/05/17/business/businessspecial2/17certify.html](http://www.nytimes.com/2006/05/17/business/businessspecial2/17certify.html).

<sup>157</sup> Deloitte Development, LLC, *Energy Security, America's Best Defense 5* (2009), [www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/AD/us\\_ad\\_EnergySecurity052010.pdf](http://www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/AD/us_ad_EnergySecurity052010.pdf).

<sup>158</sup> Telephone Interview with Dan Nolan, Author, Department of Defense Energy Blog (Nov. 19, 2010).

<sup>159</sup> See CROWLEY, ET AL., *supra* note 33; CNA CORP., *supra* note 33; DEPARTMENT OF DEFENSE, *supra* note 32.

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important energy efficiency will be in the near future. Consequently, there is a question as to how self-imposed standards such as voluntary compliance with federal energy efficiency standards, from which the DOD is otherwise exempt, will play out.<sup>160</sup> One example of the uncertainty of these programs can be found in a recent article in *ClimateWire*.<sup>161</sup> According to the article, the aforementioned spray foam insulation program has now been halted in the absence of advocacy for such programs.<sup>162</sup> The difficulty of relocating the foam tents and high disposal costs have led to the demise of spray foam use, and supporters are calling for a mandate to move forward with the project.<sup>163</sup> It is unclear whether the DOD will resume the program at all. The need for advocacy is especially important for the public to understand, because of the potential for new energy technology to transform the civilian marketplace as military technology finds its way into the public domain.<sup>164</sup>

The military has begun to take the lead in energy efficiency, drive the civilian sector toward sustainable energy use, and push for “policy change to help make the necessary cultural shifts in how its people think about energy use and the decisions they make in all settings.”<sup>165</sup> The more seriously the military takes energy efficiency, the faster sustainable technology will reach the public. For that reason, progress on these efforts should be monitored and documented for the public to review. A history of military brush-offs of the importance of environmental protection does not lend itself to a campaign of global stewardship. In order to win the confidence of the public, the military must demonstrate a willingness to follow through with the programs it has set in place to lead alternative-energy development in the United States and the world.

#### IV. LOOKING AHEAD—THE STAYING POWER OF DOD ENERGY EFFICIENCY EFFORTS

There are several issues that plague the DOD’s effectiveness in

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<sup>160</sup> JESSICA FERRELL, *Air Force Calls EPA’s Bluff on Superfund Cleanup*, MARTEN LAW NEWSLETTER (Oct. 8, 2010), [www.martenlaw.com/newsletter/20101008-air-force-superfund-cleanup](http://www.martenlaw.com/newsletter/20101008-air-force-superfund-cleanup).

<sup>161</sup> Dina Fine Maron, *Energy Efficiency Has Yet to Learn The Drill in the Military*, CLIMATEWIRE (Apr. 5, 2011).

<sup>162</sup> *Id.*

<sup>163</sup> *Id.*

<sup>164</sup> Lorinc, *supra* note 134.

<sup>165</sup> Tina Casey, *U.S. Navy Takes Another Shot at New Clean Energy Tech*, CLEAN TECHNICA (June 7, 2010), [cleantechnica.com/2010/06/07/u-s-navy-takes-another-shot-at-new-clean-energy-tech/](http://cleantechnica.com/2010/06/07/u-s-navy-takes-another-shot-at-new-clean-energy-tech/).

energy leadership, including lack of incentives, organized management, compliance monitoring, and enforcement. Although the DOD may be willing to comply voluntarily with certain federal energy efficiency standards, the armed forces will not compromise national security with an operational strategy that puts too much emphasis on energy efficiency.<sup>166</sup> For instance, the DOD has no plans to leave their “fuel-guzzling 70-ton Abrams tanks”<sup>167</sup> behind in order to save fuel, a move that would severely diminish its war-fighting capabilities. Also, on an individual level it is difficult for a group of soldiers on a mission in Iraq to concern themselves with making sure their tactical vehicles or structures are energy efficient. This is evident in the failure of the spray foam program.<sup>168</sup> For this reason, the projects should be managed through the authority of commanding officers and should be well-organized. It is also important that management of these programs not rely completely upon voluntary compliance.

Voluntary compliance is not a guarantee of the staying power or effectiveness of these energy efficiency programs. In the corporate context, the “long term feasibility of [voluntary programs] as instruments of environmental policy depends on their impact on a firm’s profitability.”<sup>169</sup> However, the DOD as a federal agency is not a profit-making institution; thus, no incentives exist in that area. Studies have shown that voluntary compliance with environmental regulations can be induced by threat of mandatory environmental regulations, cost-sharing subsidies, and a desire to improve public image.<sup>170</sup> According to one study, mandatory and voluntary compliance should be considered complementary instruments.<sup>171</sup> However, threat of mandatory compliance is unlikely in the context of past military exemptions. The cost of operations is growing because of increased energy consumption and rising prices,<sup>172</sup> which could provide a driving force for compliance. After all, in order to “procure new capabilities for the future,” the DOD must reduce costs.<sup>173</sup> However, in the absence of mandatory regulatory schemes and profit motivation, it is questionable whether reducing costs, along with mobility and national security concerns over climate change,

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<sup>166</sup> Interview with Dan Nolan, *supra* note 149.

<sup>167</sup> *U.S. Forces Find Energy Efficiency Saves Lives*, EARTH NEWS (Dec. 18, 2008), [www.earthportal.org/news/?p=2027](http://www.earthportal.org/news/?p=2027).

<sup>168</sup> Maron, *supra* note 161.

<sup>169</sup> *Id.*

<sup>170</sup> Khanna & Damon, *supra* note 106.

<sup>171</sup> *Id.* at 23.

<sup>172</sup> CROWLEY ET AL., *supra* note 33, at iii.

<sup>173</sup> *Id.*

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is sufficient to guarantee future energy efficiency goals will be met.

For individual operational energy projects, organizational and cohesiveness problems make it difficult to communicate with other sectors of the military and with other base installation managers.<sup>174</sup> Particularly for base installations, a specific entity may be responsible for construction and then a different entity for management,<sup>175</sup> which can be ineffective and cause confusion over accountability. There is a lack of carrot or stick incentives for military commanders to require participation in these programs,<sup>176</sup> which creates a need for improvement in the leadership structure.

These deficiencies can be improved by developing and implementing a consolidated management system. The government has already taken steps toward this end by creating the position of Director of Operational Energy Plans and Programs, now called the Assistant Secretary for Operational Energy Plans and Programs (ASOEPP), initiated by the House Armed Services Commission (HASC).<sup>177</sup> The Obama administration appointed Sharon Burke to the position in June of 2010.<sup>178</sup> Ms. Burke came from the Center for New American Security, a defense-policy think-tank. Her position is intended to “help the military services and combatant commands improve military capabilities, cut costs, and lower operational and strategic risk through better energy accounting, planning, management, and innovation.”<sup>179</sup> This announcement comes after a long wait from those in support of creating this position.<sup>180</sup> All branches of the military are involved in energy conservation efforts, and an efficient structure will help focus research and development and create better lines of communication throughout different energy projects. The ASOEPP will have the authority to determine the energy strategy, and the public can utilize this opportunity to create pressure for more efficient military energy policy.

Along with developing operational energy strategies, the DOD

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<sup>174</sup> Telephone Interview with Dan Nolan, *supra* note 158.

<sup>175</sup> *Id.*

<sup>176</sup> Interview with Dan Nolan, *supra* note 149.

<sup>177</sup> Director of Operational Energy Plans and Programs, 10 U.S.C.A. § 139b (Westlaw 2011). The statute was amended and renumbered in January 2011, and the position title was changed to “Assistant Secretary of Defense for Operational Energy Plans and Programs.” 10 U.S.C.A. § 138c (Westlaw 2011), as redesignated and amended by Pub. L. No. 111-383, § 901(b)(7), 124 Stat. 4137, 4320 (2011).

<sup>178</sup> U.S. Department of Defense, *Sharon E. Burke Director of Operational Energy Plans and Programs*, [www.defense.gov/bios/biographydetail.aspx?biographyid=259](http://www.defense.gov/bios/biographydetail.aspx?biographyid=259) (last visited Dec. 3, 2010).

<sup>179</sup> *Id.*

<sup>180</sup> Andy Bochman & Dan Nolan, *The DoD Energy Blog* (Dec. 14, 2009), [dodenergy.blogspot.com/2009/12/director-of-operational-energy-plans.html](http://dodenergy.blogspot.com/2009/12/director-of-operational-energy-plans.html).

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should create an internal committee to monitor compliance with United States energy efficiency standards.<sup>181</sup> Such a committee would complement the ASOEPP position and provide even more transparency and accountability to the public. The ASOEPP office, as well as any subsequent monitoring committee, should be required to release regular reports online that track the progress of compliance with energy efficiency standards and new goals set by the DOD. Some environmental statutes require regulated entities to “keep careful records of their activities” and make reports to the EPA.<sup>182</sup> For example, the Clean Water Act requires federal agencies holding permits to monitor discharge pollutants and send annual records to the EPA.<sup>183</sup> Through regular progress reports of the ASOEPP’s energy strategy as well as compliance with federal standards, the DOD will be accountable for its contributions to climate change and its promises to transform its energy usage.

Setting up a mandatory system for the DOD to comply with federal energy standards raises the issue of enforcement. In the 1992 Federal Facility Compliance Act, Congress authorized the EPA to initiate administrative enforcement actions against other federal agencies under Resource Conservation and Recovery Act (RCRA) and added “each department, agency, and instrumentality of the United States” to the list of “persons” subject to the Act.<sup>184</sup> Under these changes, the EPA has the authority to “issue administrative compliance orders and impose civil penalties and initiate judicial enforcement actions against federal agencies such as the DOD.”<sup>185</sup> The same logic can be applied to energy efficiency standards and any future energy bills that are passed in Congress. Mandatory enforcement against the DOD and defense contractors<sup>186</sup> could be achieved through state action, EPA oversight, injunctive suits, citizen suits, and in some cases criminal sanctions.<sup>187</sup> Through the ASOEPP office, commanders could create an internal disciplinary system that would be applicable to separate brigades and even soldiers for unmet energy goals.

Enhanced education about the need for efficiency, public pressure,

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<sup>181</sup> CROWLEY ET AL., *supra* note 33, at 7-4.

<sup>182</sup> DYCUS, *supra* note 1, at 42.

<sup>183</sup> Clean Air Act, 40 C.F.R. §§122.4 (monitoring), 122.48, 122.44(i)(2) (reporting).

<sup>184</sup> Pub. L. No. 102-386, §§102(b), 103, 106 Stat. 1506, 1507 (1992); amending RCRA §§6001, 1004(15), 42 U.S.C. §§ 6961, 6903(15).

<sup>185</sup> DYCUS, *supra* note 1, at 42.

<sup>186</sup> *Id.*

<sup>187</sup> In 1989, three civilian employees at the U.S. Army’s Aberdeen Proving Ground in Maryland were convicted under RCRA for storing and dumping hazardous waste from chemical weapons development. DYCUS, *supra* note 1, at 42.

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and ensuring that initiatives are included in budget planning are also important aspects of the transformation. The ASOEPP position requires creating an operational strategy, but the suggestions in this Comment provide mechanisms to ensure adherence to the strategy and accountability to the government and the general public.

## V. CONCLUSION

War has wreaked havoc on the environment for centuries. Although few wars have actually been fought on United States soil, military training and weapons development have caused extensive environmental damage in the United States. The public has continually sacrificed clear skies, clean water, and healthy soil in the name of national security. Although the safety of our nation is undoubtedly important, we should not be required to risk the health of the environment to maintain a strong defense, particularly during a time of large-scale ecological shifts due to climate change.

As the world's largest user of fossil fuel, the DOD contributes significantly to global destabilization through the emission of greenhouse gases that cause climate change. The effects of climate change have visible catastrophic effects on our environment, which in turn puts national security at risk. Although the military has received exemptions from several federal environmental laws in the past, in light of the urgency presented by climate change the DOD has recently adopted energy efficiency initiatives that include voluntary compliance with federal energy efficiency standards. These initiatives come in the form of renewable fuel development, microgrid technology, and other projects aimed at reducing reliance on fossil fuels. The momentum behind the DOD's quest to lead the world in alternative energy development is strong. However, the military has a poor track record for preventing environmental degradation, and thus the public has become more interested in military environmental compliance.<sup>188</sup> Also, it is difficult to engender public trust in military assurances that it is becoming a leader in energy efficiency when the DOD currently uses 100 million barrels of oil a year.<sup>189</sup>

Creating a monitoring committee within the DOD to track the progress of compliance with energy efficiency standards, such as Executive Order 13514, would provide better transparency and establish trustworthiness among the public. As a follow-up to five-year plans on

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<sup>188</sup> DYCUS, *supra* note 1, at 187.

<sup>189</sup> Martinot, *supra* note 43, at 42.

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environmental compliance,<sup>190</sup> regular reports that are easily accessible by the public can provide a strong foundation upon which energy initiatives may continue to grow. The United States government can use enforcement models under laws like RCRA to enhance the staying power of energy programs. It is important for the DOD to keep energy efficiency a top priority, even in times of heightened threat levels. Without methods for monitoring compliance, there is little pressure to stay on task and continue the current level of technological progress. Even former Defense Secretary Dick Cheney said, “Defense and the environment is not an either/or proposition. To choose between them is impossible in this real world of serious defense threats and genuine environmental concerns.”<sup>191</sup> This proposition is even more significant now that climate change has actually become a serious security threat.

There is a vast amount of information available to the public about the effect that war and military activities have on the environment. More than ever, the public, and even military personnel, demand that the DOD change its polluting ways.<sup>192</sup> The military can be a global leader in the development of clean energy and a catalyst for massive reductions in GHG emissions. Therefore, it is vital that the DOD be required to continue this momentum and to secure the future of military energy efficiency programs.

*LAURA HORTON\**

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<sup>190</sup> DYCUS, *supra* note 1, at 190.

<sup>191</sup> Dick Cheney, Defense Secretary, Address to Defense and Environment Initiative Forum, Washington D.C. (Sept. 3, 1990).

<sup>192</sup> DYCUS, *supra* note 1, at 187, 190.

\* Laura Horton, Doctor of Jurisprudence Candidate 2012, Golden Gate University School of Law. The author would like to thank her editor, Nicole Edwards-Masuda, her faculty advisor, Professor Helen Kang, and the rest of the ELJ team for their hard work and dedication.