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Institutionalizing Sustainability: Implementation of Executive Order 13,514 and its Impact on the Environmental, Economic, and Social Performance of Pacific Northwest National Laboratory

Sarah Widder

INSTITUTIONALIZING SUSTAINABILITY: IMPLEMENTATION OF EXECUTIVE ORDER 13,514 AND ITS IMPACT ON THE ENVIRONMENTAL, ECONOMIC, AND SOCIAL PERFORMANCE OF PACIFIC NORTHWEST NATIONAL LABORATORY

SARAH WIDDER*

INTRODUCTION

Over the past several decades, companies and institutions in the United States and abroad have recognized the importance of sustainability and accountability in their operations.[1] The foundation of the modern sustainability movement began with the implementation of discrete programs, such as environmental management and corporate social responsibility programs. The goal of these programs is to improve transparency and environmental performance. More recently, corporate and government leaders have recognized that environmental performance or "greenness" alone does not ensure the holistic environmental, economic, and social performance relevant to achieving societal sustainability goals.[2]

The iconic definition of sustainability derives from a United Nations report on sustainable development entitled, "Our Common Future."[3] The report, issued by the Bruntland Commission in 1987, defined sustainability as "[activities that]. . .meet the needs and aspirations of the present without compromising the

* Research Engineer, Pacific Northwest National Laboratory operated by Battelle Memorial Institute for the U.S. Department of Energy. Detailed biographical information is available at http://tpd.pnnl.gov/staff/staff_info.asp?staff_num=1978.

1. *See generally* J.S. Golden et al., *Sustainability and Commerce Trends: Industry Consortia as the Drivers for Green Product Design*, 15 J. INDUS. ECOLOGY 821 (2011); Adam Lindgreen & Valérie Swaen, *Corporate Social Responsibility*, 12 INT'L J. MGMT. REV. 1 (2010).

2. *See* Xavier Font & Catherine Harris, *Rethinking Standards from Green to Sustainable*, 31 ANNALS TOURISM RES. 986, 987–89 (2004); William S. Laufer, *Social Accountability and Corporate Greenwashing*, 43 J. BUS. ETHICS 253, 255–58 (2003).

3. U.N. WORLD COMM'N ON ENV'T. & DEV., OUR COMMON FUTURE, U.N. DOC. A/42/427 (1987), *available at* http://www.un-documents.net/our-common-future.pdf.

ability to meet those of the future."[4] The simplicity and breadth of this definition has resulted in its persistence for nearly a quarter century. However, the Bruntland Commission's definition lacked a framework for operationalizing sustainability. Thus, new definitions and metrics have been developed to introduce more practical ways of measuring progress towards that vision. For example, John Elkington's Triple Bottom Line approach promotes measurement and reporting of institutional metrics that quantify and describe the overall sustainability performance of a company or organization in different areas.[5]

As the government establishes processes and regulations promoting sustainability and enforcing responsible resource management across industries, it is appropriate and necessary that the government incorporate sustainable management principles in its own operations. The federal government has taken a leadership role in promoting sustainable operations, including defining and establishing federal sustainability goals, quantifying key metrics to track progress toward those goals, and establishing requirements for sustainability reporting and strategic planning. These efforts have been implemented over the past few decades through a number of legislative and executive mandates. Most recently, Executive Order 13,514 (E.O. 13,514 or the E.O.), "Federal Leadership in Environmental, Energy, and Economic Performance," which was issued in 2009 and establishes metrics, goals, programs, and procedures to support more sustainable management practices in the federal sector.

This article presents an overview of the E.O. requirements and describes how those requirements have been implemented at Pacific Northwest National Laboratory (PNNL), a U.S. Department of Energy (DOE) national laboratory operated by Battelle Memorial Institute in Richland, Washington. Based on PNNL's experience, this article discusses the effectiveness of the E.O. construct in reinforcing some of PNNL's existing broad sustainability objectives and encouraging institutional change to embed sustainability decision-making in the PNNL business model. The article concludes with an analysis of the limits of the E.O. and other sustainability models, and the future challenges any large sustainability programs may face.

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4. *Id.* at 39.

5. *See generally* JOHN ELKINGTON, CANNIBALS WITH FORKS: THE TRIPLE BOTTOM LINE OF 21ST CENTURY BUSINESS (1997).

I. Background on E.O. 13,514 and Sustainability Policy in the Federal Government

On October 5, 2009, President Barack Obama signed E.O. 13,514, creating roles, responsibilities, and requirements for federal leadership in environmental, energy, and economic performance.[6] The goal of the E.O. is to establish an integrated sustainability strategy for the federal government that would help create a clean energy economy, promote energy security, safeguard the health of the environment, and protect and serve taxpayers. The strategy is meant to serve as a model for corporations and institutions across the nation.

Fundamentally, E.O. 13,514 requires federal agencies to:

1. Establish a Senior Sustainability Officer, who is responsible for creating and maintaining a Strategic Sustainability Performance Plan (SSPP).[7]

2. Develop, implement, and annually update the SSPP, which contains scope 1, 2, and 3[8] greenhouse gas[9] annual

6. Exec. Order No. 13,514, 74 Fed. Reg. 52,117 (Oct. 5, 2009).

7. *Id.*

8. Scope 1, 2, and 3 greenhouse gases refer to the relationship of the greenhouse gas emission to specific agency or institution operations. Scope 1 greenhouse gas emissions are defined as those that are directly owned or controlled by the federal agency, including but not limited to on-site generation of energy through stationary sources, federal fleet vehicular emissions, fugitive emissions (typically refrigerant, methane, or SF_6) that escape accidentally from equipment leaks, and process emissions that are released as a result of manufacturing or laboratory activities. Scope 1 greenhouse gas emissions are also referred to as direct emissions. Scope 2 emissions are greenhouse gas emissions that are associated with consumption of electricity, steam, heating, or cooling which is generated offsite and purchased or acquired by the agency. Scope 3 greenhouse gas emissions are emissions that are a consequence of the agency's activities, but are generated outside its organizational boundary, including but not limited to emissions resulting from employee commutes and business travel, solid waste disposal, wastewater treatment, livestock and manure management systems (when these operations exist on federal land but are operated by others), and material and equipment production supply chains. Scope 2 and 3 greenhouse gas emissions are both referred to as indirect greenhouse gas emissions. Council on Envtl. Quality, Office of the President, Federal Greenhouse Gas Accounting and Reporting Guidance 15–18 (2012), *available at* http://www.whitehouse.gov/administration/eop/ceq/sustainability/fedghg.

9. Greenhouse gases are gases that absorb and emit radiation in the thermal infrared, which cause the greenhouse effect and contribute to climate change. The primary greenhouse gases are water vapor, carbon dioxide, nitrous oxide, methane, and ozone. There are a number of purely anthropogenic greenhouse gases, most of which are chlorine-, bromine-, or fluorine-containing compounds (also referred to as *halocarbons*). Intergovernmental Panel on Climate Change, Climate Change 2007: Synthesis Report 76–89

emissions and reduction targets and which must be submitted and approved by the Council on Environmental Quality (CEQ) Chair and the Office of Management and Budget (OMB).[10]

3. Improve water use efficiency 2% annually, including potable, industrial, landscaping, and agricultural water use, with the goal of achieving 26% reduction in potable water use[11] and a 20% reduction in industrial, landscaping, and agricultural water use[12] by the end of fiscal year (FY) 2020.

4. Promote pollution prevention by recycling or reusing at least 50% of non-hazardous solid waste and construction and demolition waste by 2015, in addition to implementing policies which minimize the generation of waste through source reduction and careful management of materials.[13]

5. Advance regional and local integrated planning by engaging and coordinating with regional partners to incorporate sustainability impacts and existing resources into development decisions.[14]

6. Ensure all new construction and major renovations and at least 15% of existing federal agency buildings[15] comply with the "Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings,"[16] with the goal of all new federal facilities achieving net-zero-energy by 2030.[17]

7. Advance sustainable acquisition by ensuring that 95% of new acquisitions are energy-efficient (Energy Star or Federal Energy Management Program (FEMP) designated),

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(2007), *available at* http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_appendix.pdf.

10. Exec. Order No. 13,514, 74 Fed. Reg. 52,117 (Oct. 5, 2009).

11. The goal is relative to a FY2007 baseline. *Id.*

12. The goal is relative to a FY2010 baseline. *Id.*

13. *Id.* at 52,118.

14. *Id.* at 52,119.

15. The goals are for new facilities greater than 5,000 square feet. *Id.*

16. The *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings* was established as a memorandum of understanding between all the signatory federal agencies and Executive offices to commit to federal leadership in the design, construction, operation, maintenance, and demolition of high performance and sustainable buildings. *See* U.S. ENVTL. PROT. AGENCY, FEDERAL LEADERSHIP IN HIGH PERFORMANCE AND SUSTAINABLE BUILDING MEMORANDUM OF UNDERSTANDING 3–5 (2006), *available at* http://www.epa.gov/oaintrnt/documents/sustainable_mou_508.pdf.

17. By 2020 all new federal facilities are to achieve this goal. Federal Leadership in Environmental, Energy, and Economic Performance, 74 Fed. Reg. at 52,119.

> water-efficient, environmentally preferable,[18] and non-ozone depleting; and contain bio-based content, recycled content, or are non-toxic, where such products are available that meet agency performance requirements.[19]
>
> 8. Promote electronic stewardship through procuring energy-efficient and environmentally preferred products and efficient management of electronic equipment.[20]
>
> 9. Sustain environmental management by ongoing and effective implementation of environmental management systems necessary to meet the goals of the E.O.[21]

E.O. 13,514 also includes a number or recommendations and requirements regarding the scope of the above-mentioned metrics and strategies for meeting those targets. For example, the E.O. requires use of low-flow fixtures, efficient cooling towers, and specific storm water management guidance,[22] which contribute to the improvement of water efficiency and sustainable water management.[23]

E.O. 13,514 builds on and enhances the existing requirements for environmental performance, health and safety compliance, and social accountability that federal agencies, as well as commercial entities, must currently abide by. Principally, E.O. 13,514 builds on requirements and goals established for federal agencies in the Energy Independence and Security Act (EISA) of 2007[24] and E.O. 13,423 of 2007[25] regarding energy efficiency, water efficiency, waste prevention, sustainable buildings, sustainable acquisitions, environmental management, and greenhouse

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18. An environmentally preferable product is typically a product which has characteristics that reduce or minimize the negative environmental impacts of the production, use, and/or disposal of that product. In a regulatory construct, environmentally preferable products are typically demonstrated by a rating, certification, or designation, for example by the Electronic Product Environmental Assessment Tool (EPEAT) or Forest Stewardship Council. *Id.* at 52,120.

19. *Id.*

20. *Id.*

21. *Id.*

22. *Id.* at 52,118.

23. For a detailed account of the E.O. 13,514 requirements, see Federal Leadership in Environmental, Energy, and Economic Performance, 74 Fed. Reg. at 52,117. A list of all Strategic Sustainability Performance Plans (SSPs) is available at http://sustainability.performance.gov/.

24. Energy Independence and Security Act of 2007, Pub. L. No. 110-140, 121 Stat. 1492.

25. Exec. Order No. 13,423, 72 Fed. Reg. 3,919 (Jan. 24, 2007).

gas management.[26] As part of existing environmental management plans, agencies are also subject to a number of other, related mandates. These laws include the National Energy Conservation Policy Act (NECPA) of 1978;[27] the Energy Policy Act of 2005 (EPACT 2005);[28] the Clean Air Act;[29] the Clean Water Act;[30] the Safe Drinking Water Act;[31] the National Environmental Policy Act (NEPA);[32] the Pollution Prevention Act;[33] the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA);[34] the Resource Conservation and Recovery Act (RCRA);[35] the Toxic Substances Control Act;[36] the Atomic Energy Act;[37] the Endangered Species Act;[38] statutes concerning protection of plants, animals, and local ecosystems;[39] and laws related to historic and cultural resource preservation.[40] As can be seen by the lengthy list, the scope and depth of existing regulatory requirements are quite extensive. However, E.O. 13,514 improves on the existing environmental, health and safety, and social accountability requirements in a number of ways.

First, E.O. 13,514 establishes a comprehensive framework for reporting and improving an agency's performance on multiple fronts, as compared to previous targeted legislation that can result in piecemeal approaches to often complex, interrelated

26. *See* OFFICE OF THE FED. ENVTL. EXEC., CROSSWALK FOR E.O. 13514, E.O. 13423, AND OTHER STATUTES (2009), *available at* http://www.fedcenter.gov/_kd/go.cfm?destination=ShowItem&Item_ID=14139.

27. National Energy Conservation Policy Act of 1978, Pub. L. No. 95-619, 92 Stat. 3206 (codified in scattered sections of 42 U.S.C.).

28. Energy Policy Act of 2005, Pub. L. No. 109-58, 119 Stat. 594.

29. Clean Air Act, 42 U.S.C. §§ 7401–7671 (2011).

30. Clean Water Act, 33 U.S.C. §§ 1251–1387 (2006).

31. Safe Drinking Water Act, 42 U.S.C. § 300f (1996).

32. National Environmental Policy Act, 42 U.S.C. §§ 4321–4347 (1975).

33. Pollution Prevention Act, 42 U.S.C. §§ 13101–13109 (1990).

34. Superfund Act, 42 U.S.C. §§ 9601–9675 (2005).

35. Resource Conservation and Recovery Act, 42 U.S.C. § 6901 (1976).

36. Toxic Substances Control Act, 15 U.S.C. §§ 2601–2692 (2010).

37. Atomic Energy Act, 42 U.S.C. §§ 2011–2297 (2011).

38. Endangered Species Act, 16 U.S.C. §§ 1531–1544 (2008).

39. Bald and Golden Eagle Protection Act, 16 U.S.C. § 668–668d (1972); Migratory Bird Act, 16 U.S.C. §§ 703–712 (2004); and Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. §§ 136–136y (2012).

40. American Indian Religious Freedom Act, 42 U.S.C. §§ 1996–1996a (1994); Antiquities Act, 16 U.S.C. §§ 431–433 (1904); Archeological and Historic Preservation Act of 1974, 16 U.S.C. §§ 469–469c (1974); Archaeological Resources Protection Act, 16 U.S.C. §§ 470aa–mm (1966); Historic Sites Act of 1935, 16 U.S.C. §§ 461–467 (2012); National Historic Preservation Act of 1966, 16 U.S.C. §§ 470–470x (2006); Native American Graves Protection and Repatriation Act, 25 U.S.C. §§ 3001–3013 (1990).

issues. The integrated approach proposed in the E.O. includes: improvements in energy efficiency, reporting and reductions of direct and indirect greenhouse gas emissions, water conservation, waste minimization, implementation of sustainable building design and purchasing policies, community involvement, and accountability. The E.O. brings together many of the fundamental principles behind the aforementioned existing regulations and requirements while avoiding conflicts, contradictions, and counteractions with previous requirements. Instead, by simultaneously tracking the environmental, economic, and social performance of institutions, E.O. 13,514 enables the identification of the interrelationship of many of these metrics. For example, the E.O. requires agencies to consider environmental impacts, as well as social and economic benefits and costs, in evaluating projects based on a life-cycle return on investment.[41]

Second, E.O. 13,514 encourages a continual assessment and improvement process. In E.O. 13,514, each agency is required to establish and annually update an SSPP that identifies specific agency goals, approaches, and results relevant to the sustainability metrics identified in E.O. 13,514.[42] The metrics used to track agency sustainability are to be quantifiable and measurable.[43] In the SSPP, agencies must continually evaluate past performance, identify areas for improvement, and revise policies and procedures to improve performance towards identified sustainability goals.[44] In addition, E.O. 13,514 establishes a grading structure that is used to evaluate agency performance against the goals of the E.O. and those established in the agency's SSPP.[45] This creates a culture of continual improvement and encourages embedding sustainability as part of the organizational decision-making process. In this way, the E.O. approach has the potential to achieve greater results than a compliance-based approach, which provides incentive only for meeting the minimum criteria as cost-effectively as possible.

Third, E.O. 13,514 provides a flexible pathway to achieving goals, which allows for consideration and accommodation of difficult or unique situations. This is important because there are a wide variety of building ownership, rental, and use situations, which presents a challenge in fully implementing some policies and in determining the correct reporting. For example, in a facility with a fully serviced lease, the tenant agency may be una-

41. Exec. Order No. 13,514, 74 Fed. Reg. 52,117 (Oct. 5, 2009).
42. *Id.*
43. *Id.*
44. *Id.*
45. *Id.* at 52,121.

ble to perform permanent building retrofits, like replacing windows. Energy efficiency measures that could be implemented by the tenant agency may be limited to lighting, plug load management, and possibly commissioning activities. In this case, the tenant agency would report the greenhouse gas emissions from these facilities voluntarily as scope 3 emissions. Conversely, agencies may own buildings that are operated and occupied by other agencies. In this case, the landlord agency has little control over how the tenant agency operates or uses the building and thus the tenant is required to report the greenhouse gas emissions from energy use in this facility as part of its scope 2 emissions.[46] The Executive report, "Federal Greenhouse Gas Accounting and Reporting Guidance,"[47] often associated with E.O. 13,514, has been developed based on generally accepted GHG accounting protocols (i.e. the Green House Gas Protocol for the Public Sector),[48] but adapted as necessary to address the unique characteristics of federal agencies. This improves compliance and performance towards sustainability goals as compared to a more inflexible, legislated definition, which may have required some facility types to be exempted from coverage unnecessarily.

Fourth, E.O. 13,514 enforces the institutionalization of sustainability within the federal government through establishing explicit transparency and accountability requirements. Through the E.O., each agency must designate a Senior Sustainability Officer, responsible for compliance with the policies of the E.O. and accountable to the Chair of the Council on Environmental Quality (CEQ) and the Director of the Office of Management and Budget (OMB).[49] The E.O. also establishes an interagency Steering Committee on Federal Sustainability, composed of the Federal Environmental Executive[50] and the agency Senior Sustainability Officers, which offers a forum for sharing of information, collaboration, and communication. Notably, the Steering

46. An agency may report the greenhouse gas emissions as part of its scope 3 greenhouse gas emissions.

47. COUNCIL ON ENVTL. QUALITY, *supra* note 8.

48. *See generally* STEPHEN RUSSELL ET AL., WORLD RES. INST., THE GREENHOUSE GAS PROTOCOL FOR THE U.S. PUBLIC SECTOR: INTERPRETING THE CORPORATE STANDARD FOR U.S. PUBLIC SECTOR ORGANIZATIONS (2010), *available at* http://www.wri.org/publication/ghg-protocol-for-us-public-sector.

49. Federal Leadership in Environmental, Energy, and Economic Performance, 74 Fed. Reg. at 52,120–52,122.

50. The Federal Environmental Executive is a position designated by the President to head the Office of the Federal Environmental Executive, which is housed within the White House Council on Environmental Quality. This position and office was established by E.O. 12,873, signed by President Clinton on October 20, 1993. Exec. Order No. 12,873, 58 Fed. Reg. 54,911 (Oct. 20, 1993).

Committee is designed to serve as a conduit for information both up and down the hierarchical structure, providing feedback to the OMB Director and CEQ Chair, as well as implementation guidance on the agency SSPPs.[51] This formal designation of roles, responsibilities, and dialogue channels promotes the institutionalization of sustainability and the longevity of related policies and procedures. In addition, the establishment of formal responsibilities and reporting structures at the federal level has led to institutionalization of sustainability programs throughout the lower levels of government.

Finally, and perhaps most importantly, E.O. 13,514 requires agencies to integrate sustainability decision-making as part of the agency's strategic planning and budgeting process.[52] Specifically, E.O. 13,514 requires federal agencies to evaluate and prioritize agency actions based on a life-cycle return on investment, taking into consideration both social and economic costs and benefits. This long-term evaluation and robust context acknowledges that, for sustainability programs and improvements to be successful, holistic impacts must be considered at the core of institutional decision-making and planning processes.

II. Implementation of E.O. 13,514 at Pacific Northwest National Laboratory: The Triple Bottom Line

PNNL, as one of ten Department of Energy (DOE) Office of Science Laboratories, is compelled through PNNL's operating contract with DOE[53] to meet DOE's sustainability goals. DOE's goals are established in the agency's SSPP[54] and through DOE Order 436.1, "Departmental Sustainability."[55] The goals include: improving energy efficiency, expanding clean energy investments, promoting sustainable campuses, and involving employees and the DOE community in sustainability programs and improvements.[56]

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51. Federal Leadership in Environmental, Energy, and Economic Performance, 74 Fed. Reg. at 52,120.

52. *Id.* at 52,122.

53. Pac. Nw. Nat'l Lab., DOE-Battelle Prime Contract for the Management and Operation of Pacific Northwest National Laboratory DE-AC05-76RL01830 (2013), *available at* http://doeprimecontract.pnnl.gov/.

54. U.S. Dep't of Energy, 2012 Strategic Sustainability Performance Plan (2011), *available at* http://www1.eere.energy.gov/sustainability/pdfs/doe_sspp_2012.pdf.

55. U.S. Dep't of Energy, DOE Order 436.1: Departmental Sustainability (2011), *available at* https://www.directives.doe.gov/directives/0436.1-BOrder/view.

56. U.S. Dep't of Energy, *supra* note 54, at 1.

Some background on PNNL as an organization provides context for the way PNNL implemented the requirements of E.O. 13,514. PNNL is operated by Battelle, which is the world's largest scientific research and technology development organization. PNNL employs 4700 people, most of whom are located at PNNL's main campus in Eastern Washington. In 2011, PNNL's operating budget was more than $1.1 billion, supporting research for DOE, U.S. Department of Homeland Security, the National Nuclear Security Administration, and other governmental agencies, as well as universities and industry. PNNL's research and organizational policies are informed by: a mission of transforming the world through courageous discovery and innovation; a vision of creating science and technology that inspires and enables the world to live prosperously, safely, and securely; and values of integrity, creativity, collaboration, impact, and courage.[57]

In 2008, prior to the implementation of E.O. 13,514, PNNL embraced the opportunity to embed sustainable decision-making in its operation strategy. Policies and procedures introduced as part of E.O. 13,514 have now helped establish and institutionalize environmental sustainability priorities and key metrics to include in PNNL's strategic plans. In defining PNNL's Sustainability Program,[58] PNNL focused on twelve sustainability priorities that PNNL determined were most important to its primary stakeholders—the DOE, PNNL employees, and the communities in which PNNL works.[59] These sustainability priorities incorporate a triple bottom line approach, which balances priorities in environmental stewardship, social responsibility, and economic prosperity. PNNL reports these sustainability priorities and metrics in the Lab's annual Sustainability Report.[60] The annual PNNL Sustainability Report presents a retrospective look at PNNL's performance across these priorities using the GRI guidelines. The PNNL Sustainability Report is a companion to the requisite annual SSP, which is a requirement under DOE Order 436.1 and presents PNNL's performance against the E.O. requirements for DOE assets managed by PNNL, as well as plans for achieving the E.O. reduction targets. The Sustainability

57. For more information about PNNL, visit http://www.pnnl.gov/.

58. For more information about Sustainable PNNL, visit http://sustainable.pnnl.gov/.

59. PNNL is located in Richland, Washington, which is one of the three "Tri-Cities" of Washington, along with Kennewick and Pasco. *About PNNL,* PAC. NW. NAT'L LAB., http://www.pnnl.gov/about/ (last visited Feb. 25, 2013).

60. PAC. NW. NAT'L LAB., 2011 SUSTAINABILITY REPORT (2011), *available at* http://sustainable.pnnl.gov/docs/2011sustainability_report.pdf.

Report presents PNNL's comprehensive sustainability program and approach. In keeping with the philosophy of continual improvement, PNNL highlights positive aspects of progress towards sustainability goals and identifies areas for improvement in its Sustainability Report and SSP. To formally report these and other sustainability metrics, PNNL chose to use an external, third-party accredited format to increase the stringency and transparency of the Sustainable PNNL's reporting and progress. PNNL selected the Global Reporting Initiative (GRI) G3 Sustainability Reporting Guidelines because they provide a holistic assessment across environmental, social, and economic impacts.[61]

PNNL's environmental priorities are to reduce building energy use and greenhouse gas emissions, to travel smarter, to minimize water use, and to reduce material purchases and waste. Many of the metrics and goals that were newly established in E.O. 13,514 are used by PNNL to measure its performance in these priority areas, such as the 20% irrigation water use reduction and 50% sanitary waste diversion goals. Other environmental metrics and goals conform with E.O. 13,423, EPACT 2005, or EISA 2007, and include goals to reduce energy use intensity in buildings by 30% by 2015,[62] generate at least 7.5% electricity from renewable sources by 2013 and thereafter,[63] and reduce petroleum use in fleet vehicles by 20% by 2015.[64]

On some of these environmental metrics PNNL is far exceeding the established goal. For example, in the area of renewable energy purchases, PNNL is currently purchasing 62% of the power the Lab consumed in 2012 as renewable energy.[65]

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61. The Global Reporting Initiative (GRI) is a non-profit organization that works towards a sustainable global economy by providing sustainability reporting guidance. GRI has pioneered and developed a comprehensive Sustainability Reporting Framework that is used around the world. The Framework enables all organizations to measure and report their economic, environmental, social, and governance performance in a standardized format. *See G3 Guidelines*, GLOBAL REPORTING INITIATIVE, https://www.globalreporting.org/reporting/latest-guidelines/g3-guidelines/pages/default.aspx (last visited Feb. 25, 2013).

62. The energy reduction goal is based on a 2003 baseline. This requirement was established in EISA 2007 section 431, and was reaffirmed in Exec.Order No. 13,423.

63. Energy Policy Act, 42 U.S.C. § 15852 (2005).

64. The petroleum reduction goal is based on a 2005 baseline. This requirement was established in EISA 2007 section 142, and was reaffirmed in Exec. Order No. 13,423 as 2% per year from the time period between 2005 and 2015.

65. PAC. NW. NAT'L LAB., FY2013 SITE SUSTAINABILITY PLAN (2012), *available at* http://sustainable.pnnl.gov/docs/2013Sustainability_Plan.pdf.

On others, PNNL is challenged to reach its goals, such as scope 1 and 2 greenhouse gas emissions, which in 2012 were 1% higher than the 2008 baseline primarily due to energy intensive computing equipment (including a new supercomputer) that PNNL uses to carry out its mission requirements for the DOE.[66] Similarly, despite declining for three consecutive years, scope 3 greenhouse gas emissions still remain 11% over PNNL's baseline, driven largely by a tremendous growth in the number of employees after the baseline year and federal project requirements with extensive travel requirements. This illustrates one of the main areas for improvement in the implementation of Sustainable PNNL. Many of the sustainability targets are still compliance-based in that they are based on requirements in E.O.s 13,514, 13,423, or other regulations, and are not tailored to PNNL's specific sustainability strengths and weaknesses. In order for sustainability to truly become a continuous decision-making tool, and not another minimum standard to meet, metrics as well as target levels should be unique to each organization and continually revised based on changing situations, just as budget projections and business portfolio goals are organization-specific and routinely updated.

In accordance with this philosophy, E.O. 13,514 instructs agencies to establish unique targets for greenhouse gas reduction. DOE established specific targets of 28% reduction for scope 1 and 2 greenhouse gas emissions, and 13% reduction of scope 3 greenhouse gas emissions,[67] which PNNL was compelled to adopt as well.[68] PNNL is making significant progress towards these goals, but will be challenged to meet or beat them. To achieve these goals, PNNL is implementing campus-wide programs aimed at increasing building energy efficiency, encouraging alternative commuting, and introducing viable alternatives to business travel, among other things.[69] These programs are significantly changing the way PNNL employees work and travel, and the way PNNL manages its facilities and fleet vehicles. Through increased collaboration between PNNL researchers and Facilities and Operations staff, PNNL is exploring innovative new building efficiency solutions to implement on campus. These rigorous sustainability goals have pushed PNNL to find more creative and comprehensive solutions that work to embed sus-

66. *Id.*

67. U.S. DEP'T OF ENERGY, *supra* note 54, at 8.

68. PAC. NW. NAT'L LAB., *supra* note 60.

69. For more information on the programs implemented as part of Sustainable PNNL, see *Sustainability at PNNL*, PAC. NW. NAT'L LAB., http://sustainable.pnnl.gov/ (last visited Feb. 25, 2013).

tainability in the everyday decisions of building managers and employees.

PNNL's social and economic metrics are unique to PNNL. PNNL's social responsibility priorities are to keep employees healthy and safe, to invest in employees' professional development, to create an inclusive work environment, and to foster the next generation of scientists and engineers. PNNL's economic priorities are to transfer technology that makes a difference, to maintain financial viability through research and operational excellence, to support small businesses, and to give back to local communities. Most of these priority areas have specific, quantifiable metrics and targets.[70] For example, effectiveness at supporting the next generation of volunteers is currently measured by participant rating of PNNL's work-based learning program.

PNNL's environmental, economic, and social metrics and goals build on, and bring together, existing programs within PNNL. PNNL's Sustainability Program has also created new opportunities for quantifiable metrics, transparent reporting, and holistic assessment, which had not existed before. For example, PNNL has implemented and aggressively promoted a new telework program to help decrease scope 3 greenhouse gas emissions, as well as improve employee satisfaction. To this end, PNNL established a goal of 40% of staff teleworking one day per week, on average. Also, the PNNL Sustainability Program has also encouraged clear reporting and communication of its internal goals, metrics, and progress to PNNL's stakeholders.

Previous to implementation of the PNNL Sustainability Program, PNNL engaged in a number of environmental, health, and safety compliance efforts. PNNL manages compliance with federal, state, and local environmental and health and safety laws through an environmental management system, which has been registered in compliance with the International Organization for Standardization (ISO) 14001 Environmental Management Systems criteria since 2002.[71] PNNL's tracking and communication of environmental and safety metrics was previously a very compli-

70. See PAC. NW. NAT'L LAB., *supra* note 60, for more information on these metrics, and PNNL's performance against them.

71. PNNL is registered with ISO 14001 through Battelle Pacific Northwest Division (PNWD). Battelle PNWD EMS was first registered to the ISO 14001:1996 Standard in November 2002 and received registration to the ISO 14001:2004 standard in December 2005. *See Environmental Management System*, PAC. NW. NAT'L LAB., http://www.pnnl.gov/ems/default.asp (last visited Feb. 25, 2013).

ance-based approach.[72] However, as part of improving the Lab's performance in these areas, PNNL also had existing programs that encouraged employee engagement and implementation of some innovative solutions through the Pollution Prevention Program, aimed at reducing the quantity and toxicity of waste generated on-site,[73] and the Voluntary Protection Program (VPP), which promotes safe work practices across the site.[74] Under Battelle's operation, PNNL also addressed social metrics through a community outreach program called Team Battelle,[75] in accordance with founder Gordon Battelle's commitment to involvement and philanthropy in the local community.[76] PNNL's implementation and interpretation of the sustainability guidance in E.O. 13,514 and DOE Order 436.1 have brought these efforts together under the PNNL Sustainability Program, enabling simultaneous tracking and synergistic benefits between environmental, safety, and community outreach programs.

Implementation of E.O. 13,514 has reinforced the institutionalization of sustainability into PNNL's Lab-wide governance approach. The PNNL Sustainability Program consists of researchers and Facility and Operations representatives who engage directly with Lab management through the Science and Technology Council. In addition, the Executive Committee at PNNL, which has the responsibility of ensuring that PNNL achieves simultaneous excellence in science and technology research, operations and management, and community service, is directly engaged in the ongoing review of PNNL's economic, environmental, and social performance. PNNL also regularly solicits feedback from each of the key stakeholder groups—employees, customers, suppliers, and the community—who have the most influence on or are most influenced by PNNL's sustainability performance.

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72. J.P. DUNCAN ET AL., PAC. NW. NAT'L LAB., U.S. DEP'T OF ENERGY, PACIFIC NORTHWEST NATIONAL LABORATORY SITE ENVIRONMENTAL REPORT FOR CALENDAR YEAR 2011 (2012), *available at* https://www.pnl.gov/ems/docs/PNNL-21787.pdf.

73. *See Pollution Prevention*, PAC. NW. NAT'L LAB., http://sustainable.pnnl.gov/pollutionPrevention.stm (last visited Feb. 25, 2013).

74. *See PNNL's Voluntary Protection Program*, PAC. NW. NAT'L LAB., http://vpp.pnnl.gov/ (last visited Feb. 25, 2013).

75. *See About Team Battelle*, PAC. NW. NAT'L LAB., http://regionaloutreach.pnnl.gov/team-battelle/ (last visited Feb. 25, 2013).

76. For more information on Battelle Memorial Institute's mission and values, see *Our Mission, Vision & Values*, BATTELLE, http://www.battelle.org/about-us/our-mission-vision-values (last visited Feb. 25, 2013).

III. E.O. 13,514 AS A MODEL FOR CORPORATE SUSTAINABILITY

E.O. 13,514 offers a good model for a sustainability policy framework both within and outside of the federal government. E.O. 13,514 is meant to encourage the government to "lead by example,"[77] and has been successful in creating a fundamental framework for sustainability that should be translatable and successful across organization types, including corporations and other institutions.

Sustainability models and metrics are not new to industry. Previous frameworks that have been proposed and applied, with some success, include:

1. The AICHE Sustainability Metrics,[78] which include a dimension of business sustainability by normalizing environmental impact to production.
2. The Institution of Chemical Engineers metrics,[79] which rely on the concept of environmental burden in terms of direct emissions to the environment, normalized against economic activity, resulting in a "burden per unit value added."[80] The IChemE sustainability framework also adds social aspects of sustainability, a significant step towards recognizing that component of sustainability.
3. The Dow Jones Sustainability Indexes,[81] which are popular because they rely on a questionnaire rather than measured data in most cases to determine sustainability performance in economic, environmental, and social areas.

The drawback of the sustainability models previously or currently used in industry is that they often pit environmental or social action against business decisions by developing environmental metrics that are normalized with respect to economic metrics. This does not allow for simultaneous optimization, or independent consideration and valuation of different economic, social, and environmental metrics.

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77. Exec. Order No. 13,514, 74 Fed. Reg. 52,117, 52,117 (Oct. 5, 2009).

78. Jeanette Schwarz et al., *Use Sustainability Metrics to Guide Decision-Making,* CEP MAG. 58, 58 (2002).

79. INST. OF CHEM. ENG'RS, THE SUSTAINABILITY METRICS: SUSTAINABLE DEVELOPMENT PROGRESS METRICS RECOMMENDED FOR USE IN THE PROCESS INDUSTRIES 2 (2002).

80. *Id.* at 9.

81. The Dow Jones Sustainability Index is administered by SAM, an investment boutique specializing in sustainability. *Dow Jones Sustainability Indexes*, DOW JONES, http://www.sustainability-indexes.com/index.jsp (last visited Feb. 25, 2013).

Some industry-based sustainability models make it difficult to value robust sustainability decisions by unequal weighting of economic metrics. This can be especially problematic when environmental and social metrics are difficult to value quantitatively. For example, Chevron's approach to sustainability includes environmental, economic, and social attributes, and strives to achieve a balanced and enterprise-wide program towards sustainability improvements. However, Chevron's approach values business synergy more than environmental or social impacts, which leads to the selection of projects which have positive environmental and social impacts, as well as the most attractive economic implications.[82] This may limit overall sustainability performance, as compared to a holistic approach that would allow for the simultaneous optimization of all three categories and may lead to improved environmental and/or social performance without negatively impacting a company's bottom line.

Existing institution sustainability metrics systems also do not address institutional change or program implementation, only metrics, and more robust programs are not widely available. This can limit the extent of sustainability programs, as many sustainability improvements are long-term projects or consist of a series of small, coordinated projects that require longevity and coordination to implement. As noted previously, sustainability programs must be incorporated in an organization's business strategy and planning process in order to achieve significant and permanent change. In commenting on the sustainability programs at the Department of Defense, Laura Horton notes that voluntary compliance is not "sustainable" in that there is no institutional accountability to sustainability goals over the long term.[83] In the absence of institutional accountability via mandatory requirements, transparency and proactive stakeholder engagement can drive incorporation of sustainability into internal metrics decision-making frameworks. Ideally, both mandatory requirements and engagement of clients, suppliers, customers, and the public will drive robust sustainability programs that incorporate an independent consideration of a holistic set of environmental, economic, and social metrics.

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82. *See generally* Silvia M. Garrigo, *Corporate Responsibility at Chevron*, 31 UTAH ENVTL. L. REV. 129 (2011).

83. Laura Horton, Note, *Future Force Sustainability: Department of Defense and Energy Efficiency in a Changing Climate*, 4 GOLDEN GATE U. ENVTL. L.J. 303, 323 (2011). Notably, E.O. 13,514 still provides exemptions if sustainability actions are deemed to threaten national security. Exec. Order No. 13,514, 74 Fed. Reg. at 52,125.

IV. Conclusion

E.O. 13,514 provides a framework for setting sustainability goals, establishing accountability structures, and evaluating performance, which has helped federal entities like PNNL establish robust sustainability programs. Based on PNNL's experience, the requirements laid out in E.O. 13,514 have served as an important driver behind its emerging sustainability program.

The key characteristics and strategies of a successful sustainability program are as follows:

1. It is important to address a comprehensive and measurable set of sustainability metrics in one program. Simultaneously addressing environmental, economic, and social issues, and allowing each to be independently valued, allows for the identification of optimal and synergistic sustainability solutions that can maximize institutional sustainability performance.
2. An institution's sustainability policy, sustainability goals, targets, metrics, and strategy to achieve those goals should be documented. Documentation encourages accountability on behalf of the organization.
3. An institution should adopt a transparent decision-making framework that establishes a vehicle for stakeholder interaction. Transparency, accountability, and stakeholder engagement, both internal and external, can replace or supplement mandatory requirements.
4. Sustainability policies should be flexible to allow for the defining of goals that are specific to an organization and that change over time. These customizable sustainability goals promote a culture of continuous improvement, which constantly encourages an organization to maximize its sustainability performance in all areas and reinforces the incorporation of sustainability metrics into fundamental strategic planning and business planning processes.

Sustainability is a decision-making framework, not a solution. The best sustainability goals are those that constantly challenge an institution to examine and optimize economic, environmental, and social performance and to continually strive to do better.