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## INTEGRATING PROJECT EVALUATION INTO FUNDING ENVIRONMENTAL SUSTAINABILITY AT UNIVERSITIES

WARREN G. LAVEY\*

Initiatives to promote environmental sustainability on American higher education campuses have spurred a wide range of expenditures involving many diverse decision-makers, including new committees led by students serving in short-term positions. While the costs and benefits of some actions can be reasonably predicted, many campus projects are large, innovative, and complex, yielding uncertain direct and indirect effects on environmental, financial, educational, and other considerations. Merely tracking recipients' payments to vendors for products and services sacrifices opportunities to learn from experience and communicate successes. As guidance, universities should look to program evaluation and grant management in federal legislation, executive order, guidelines, and World Bank processes. Recommendations emerging from these efforts to improve project management are that: (1) by-laws for campus sustainability funds should establish dedicated organizations for monitoring and evaluation; (2) these by-laws should require annual reviews addressing objectives and performance metrics; and (3) funding agreements should require recipients to report key indicators during and after implementation. A case study suggests revisions to one university's student-led sustainability fund.

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## I. INTRODUCTION

Actions by American higher education institutions to “green” their campuses—use less fossil-fuel energy, conserve water, protect habitat for plants and animals, reduce wastes going to landfill, and achieve other environmental goals—have increased in scale and scope. Inherently, some actions are more effective than others in achieving goals of financial returns, environmental impacts, education, innovation, and other criteria. To sort through potential actions for funding, many campus sustainability committees attempt to predict impacts and apply prospective cost-benefit analysis. However, uncertainties as to actual direct and indirect impacts surround many large, complex, and innovative proposals. Moreover, the actual effects of such actions must be carefully monitored, analyzed, and communicated in order to inform and gain support for future projects.

Because of the recent rise in sustainability initiatives and student-led decision-makers at universities and colleges, fundamental lessons from grant management and program review are missing on some campuses. Project evaluation should be integrated into the

design and operation of funds to promote campus environmental sustainability. Effective project selection and management requires identifying the objectives for the project and related targets; defining practical performance metrics relevant to the project's goals; determining how data on these metrics will be collected; periodically evaluating the performance data through analysis of direct and indirect effects; developing evaluations by both project teams and independent experts; communicating the evaluations; assessing options for improving projects; and establishing the organization, budget, and personnel to execute these functions.

Importantly, adopting methods to learn from experience depends on inserting certain provisions in the by-laws for campus sustainability funds and in their agreements with recipients of funding. First, the management of campus sustainability funds should include independent committees for monitoring and evaluating projects, with input into the review of applications. Second, the funds' annual reports should track performance of funded projects in terms of various objectives and measurement of actual impacts. Third, funding agreements should specify target outcomes; key indicators; data collection and reporting during and after installation; mid-term project reviews; user surveys; and evaluations by the project team (grantor and grantee) as well as independent committees. This framework for project monitoring and evaluation would enable stronger financing, selection, design, and implementation for campus initiatives. Additionally, students involved in these campus funds and environmental projects would learn skills applicable to grant-making and project management in many sectors.

The next section of this article describes some features of recent efforts by American higher education institutions to "green" their campuses. Often these efforts are deficient in processes for monitoring and evaluating projects' costs and benefits. The third and fourth sections consider relevant approaches to project evaluation and grant management by the U.S. federal government and World Bank. Over several decades, legislation, regulations, Executive Orders, guidelines, and contract provisions have aimed at stronger performance metrics, tracking, reporting, and assessment of environmental and other projects. Then, Section V presents, as a case study, opportunities at the University of Illinois (main campus) to improve project evaluation in funding by the student sustainability committee.

## II. EMERGENCE OF NEW SUSTAINABILITY INITIATIVES AND DECISION-MAKERS AT AMERICAN UNIVERSITIES

### A. Growth of Campus Sustainability Initiatives

American higher education institutions have embraced environmental sustainability initiatives in their curricula,<sup>1</sup> research, and campus operations.<sup>2</sup> The coverage of “sustainability” initiatives varies across institutions. In addition to promoting education, innovation, and community leadership, these initiatives generally target reducing: the use of energy generated by fossil fuels; emission of air pollutants (especially carbon dioxide and other greenhouse gases (GHGs)); consumption and contamination of water and other natural resources; amounts of wastes; and loss of habitat for plants and animals.<sup>3</sup> Although many environmental efforts by universities and colleges date back decades, the increasing focus in recent years on global climate changes and GHG emissions heightened the adoption, scale, and scope of campus sustainability initiatives.<sup>4</sup>

The following short descriptions of developments demonstrate the substantial size of this movement and provide the context for considering shortcomings in managing campus sustainability funds.

#### 1. The American College & University Presidents’ Climate Commitment (ACUPCC) engages participating institutions in a framework of actions and plans intended to re-

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1. See P. Bartlett & G. Chase, *Sustainability in Higher Education: Stories and Strategies for Transformation*, MIT PRESS (2013); M. Stewart, *Transforming Higher Education: A Practical Plan for Integrating Sustainability Education into the Student Experience*, 1 J. SUSTAINABILITY ED. (2010); M. Shriberg & K. Harris, *Building sustainability change management and leadership skills in students: lessons learned from ‘Sustainability and the Campus’ at the University of Michigan*, 2 J. ENVTL. STUD. SCI. 154 (2012).

2. *Sustainability – Power*, DARTMOUTH SUSTAINABILITY PROJECT, <http://sustainability.dartmouth.edu/power/> (last visited Jan. 24, 2015). Approximately forty-eight hundred universities in the United States use ninety-six million megawatt hours of energy per year. *Id.* Students account for five percent of the United States’ population and universities control two percent of our country’s GDP. *Id.*

3. See UNIV. OF MD., STUDENT SUSTAINABILITY FUND BY-LAWS 1 (Mar. 16, 2012), available at [http://www.sustainability.umd.edu/documents/sustainabilityfund/University%20Sustainability%20Fund%20By-Laws%20\(amended%203-16-12\).pdf](http://www.sustainability.umd.edu/documents/sustainabilityfund/University%20Sustainability%20Fund%20By-Laws%20(amended%203-16-12).pdf) [hereinafter Maryland By-Laws]; see also UNIV. OF CAL., BERKELEY, THE GREEN INITIATIVE FUND, 2013 ANNUAL REPORT 5 (2013), available at [http://issuu.com/thegreeninitiativefund/docs/2012-2013\\_tgif\\_annual\\_report](http://issuu.com/thegreeninitiativefund/docs/2012-2013_tgif_annual_report) [hereinafter BERKELEY TGIF].

4. See W. Lavey, *Energy Efficiency as Fundamental to the Missions of U.S. Religious Congregations, Health Care Providers and Schools*, 3 WASH. & LEE J. ENERGY, CLIMATE & ENV’T 1, 26-33 (2012); N. Upadhyay, *Campus Sustainability Programs: Putting Universities at the Forefront of Green Movement*, GREEN ECON. POST (2010), <http://greeneconomypost.com/campus-sustainability-programs-putting-universities-green-movement-8995.htm>.

duce their global warming emissions.<sup>5</sup> As of the end of 2012, there were 664 signatory institutions (enrolling over 6.3 million students); their submissions pursuant to this commitment covered 1,648 GHG inventories, 482 climate action plans, and 263 progress reports on the climate action plans.<sup>6</sup> ACUPCC institutions reported reducing gross GHG emissions by 10.2 million metric tons of carbon dioxide-equivalent as of 2012; they committed to double this emissions reduction by 2022.<sup>7</sup> A climate action plan - developed by each institution to reflect its particular facilities, opportunities, and challenges - encompasses a wide range of short-term and long-term targets, strategies, and actions for reducing the GHG emissions from campus operations. The plans may also reflect other environmental and educational objectives. Each plan leads to various campus improvement projects.

**2.** The Association for the Advancement of Sustainability in Higher Education (AASHE) developed and makes available a self-reporting framework for universities and colleges to measure their sustainability performance.<sup>8</sup> As of July 2013, 261 institutions submitted reports for rating using this tool, with forty-seven achieving the gold (highest) rating and 131 achieving silver.<sup>9</sup> In the area of operations,

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5. ACUPCC, *Text of the American College & University Presidents' Climate Commitment*, PRESIDENTS' CLIMATE COMMITMENT, <http://www.presidentsclimatecommitment.org/about/commitment> (last visited Jan. 24, 2015). Signatories must (1) develop a comprehensive plan to achieve climate neutrality as soon as possible, including (a) complete an inventory of all GHG emissions (including those emissions from electricity, heating, motor-vehicles, and air-travel) within one year and (b) develop an action plan within two years, with targets, actions and mechanisms for tracking progress; (2) take tangible actions to reduce GHG emissions while the plan is being developed; and (3) publicize their action plan, inventory and periodic progress reports. *Id.*

6. THE AM. COLL. & UNIV. PRESIDENTS' CLIMATE COMMITMENT, 2012 REPORT 3 (2013), *available at* [http://www.presidentsclimatecommitment.org/files/documents/ACUPCC\\_2012\\_Update.pdf](http://www.presidentsclimatecommitment.org/files/documents/ACUPCC_2012_Update.pdf).

7. THE AM. COLL. & UNIV. PRESIDENTS' CLIMATE COMMITMENT, CELEBRATING FIVE YEARS OF CLIMATE LEADERSHIP 9 (2012), *available at* [http://www.presidentsclimatecommitment.org/files/documents/acupcc\\_5yr\\_report\\_single-pages\\_hirez.pdf](http://www.presidentsclimatecommitment.org/files/documents/acupcc_5yr_report_single-pages_hirez.pdf).

8. *Sustainability Tracking, Assessment & Rating System*, ASS'N FOR THE ADVANCEMENT OF SUSTAINABILITY IN HIGHER EDUC., <https://stars.aashe.org/pages/about/stars-overview.html> (last visited Jan. 24, 2015).

9. ASS'N FOR THE ADVANCEMENT OF SUSTAINABILITY IN HIGHER EDUC., STARS 2013 ANNUAL REVIEW 2-3, 14 (2013), *available at* [http://www.aashe.org/files/documents/STARS/stars\\_2013\\_annual\\_review\\_final.pdf](http://www.aashe.org/files/documents/STARS/stars_2013_annual_review_final.pdf) [hereinafter STARS 2013 REVIEW] (about thirty participating institutions were outside the United States).

the tool addresses performance indicators in the categories of air and climate, buildings, dining services, energy, grounds, purchasing, transportation, waste, and water.<sup>10</sup> Among other reasons for an institution to participate in this rating system, the institution gains recognition for its sustainability efforts. Additionally, the framework assists in identifying best practices for implementation, creates a baseline for continuous improvement, and helps integrate sustainability into the institution's planning and budgeting.<sup>11</sup> After an initial submission using the reporting tool, a participating institution can earn a higher rating by undertaking campus improvement projects guided by the system's performance indicators and then submitting a new report. As of July 2013, thirty-nine of 261 participating institutions submitted a second report.<sup>12</sup>

Another indicator of the environmental activities on campuses is the emergence of dedicated funds for grants and loans to campus sustainability projects. As of June 2014, AASHE's Campus Sustainability Green Fund database presented information on funds at 136 institutions.<sup>13</sup> The campus sustainability revolving loan funds at eighty institutions contained almost \$119 million.<sup>14</sup> These funds provide financing for projects such as renewable energy installations, energy efficiency retrofits, educational outreach, and sustainability staff. The main sources of these funds are student fees, alumni donations, administrative budgets, and grants.

In particular, in 2011 the Sustainable Endowments Institute in collaboration with fifteen partner organizations launched the Billion Dollar Green Challenge to encourage colleges, universities, and other nonprofit institutions to invest a combined total of one-billion dollars in self-managed revolving loan funds that finance energy efficiency improvements.<sup>15</sup> As of June 2014, over forty Ameri-

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10. STARS 2013 REVIEW, *supra* note 9, at 6.

11. *Why Participate in STARS?*, ASS'N FOR THE ADVANCEMENT OF SUSTAINABILITY IN HIGHER EDUC., <https://stars.aashe.org/pages/about/why-participate.html> (last visited Jan. 24, 2015).

12. STARS 2013 REVIEW, *supra* note 9, at 2.

13. *Campus Sustainability Green Funds Database*, ASS'N FOR THE ADVANCEMENT OF SUSTAINABILITY IN HIGHER EDUC., <http://www.aashe.org/resources/green-funds/> (last visited Jan. 24, 2015).

14. *Campus Sustainability Revolving Loan Funds Database*, ASS'N FOR THE ADVANCEMENT OF SUSTAINABILITY IN HIGHER EDUC., <http://www.aashe.org/resources/campus-sustainability-revolving-loan-funds/> (last visited Jan. 24, 2015).

15. *See The Billion Dollar Green Challenge. Save Energy. Grow Money.*, SUSTAINABLE ENDOWMENTS INST. (2011), <http://greenbillion.org/wp-content/uploads/2011/>

can higher education institutions participated in this initiative.<sup>16</sup> A tool available for participants assists in tracking financial, energy and carbon savings of the financed projects.<sup>17</sup>

Several other national ratings and competitive events draw attention to efforts on campuses to reduce electricity and water consumption, GHG emissions, wastes, and other pollutants. These competitions attract widespread participation and publicity, affecting students' decisions on which institution to attend, funding for campus projects, and school pride. They include the Princeton Review's Guide to Green Colleges,<sup>18</sup> the Sierra Club's evaluation of Cool Schools,<sup>19</sup> the National Wildlife Federation's Campus Conservation Nationals,<sup>20</sup> and the RecycleMania Tournament.<sup>21</sup> Again, institutions can undertake various campus projects that affect their performance in these competitions.

A wide variety of guides to campus sustainability projects and compilations of best practices illustrate the interest and activity in this field. Several of these efforts target students as important actors in conceiving, obtaining support for, and implementing campus sustainability projects. These publications include: AASHE's "Creating a Campus Sustainability Revolving Loan Fund: A Guide for Students";<sup>22</sup> the U.S. Green Building Council's (USGBC) student groups and publications for campus projects, such as

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10/TheChallenge-OnePageSummary.pdf (in 2011, of the 322 colleges and universities covered by the Sustainable Endowments Institute report, less than five percent of the building space in their 45,000 plus buildings had achieved savings from energy efficiency retrofits); *see also* JOE INDVIK ET AL., SUSTAINABLE ENDOWMENTS INST. & ASS'N FOR THE ADVANCEMENT OF SUSTAINABILITY IN HIGHER EDUC., GREEN REVOLVING FUNDS: A GUIDE TO IMPLEMENTATION AND MANAGEMENT, (2013), *available at* [http://greenbillion.org/wpcontent/uploads/2013/08/GRF\\_Full\\_Implementation\\_Guide.pdf](http://greenbillion.org/wpcontent/uploads/2013/08/GRF_Full_Implementation_Guide.pdf).

16. *Participants*, BILLION DOLLAR GREEN CHALLENGE, <http://greenbillion.org/participants/> (last visited Jan. 24, 2015).

17. *Green Revolving Investment Tracking System 1.0*, BILLION DOLLAR GREEN CHALLENGE, <http://greenbillion.org/grits/> (last visited Jan. 24, 2015).

18. *See The Princeton Review's Guide to 332 Green Colleges*, PRINCETON REVIEW (2014), *available at* <http://www.princetonreview.com/green-guide.aspx>.

19. Avital Andrews, *Methodology: How we surveyed and scored the schools*, SIERRA CLUB, <http://www.sierraclub.org/sierra/201309/cool-schools/methodology.aspx> (last visited Jan. 24, 2015) (162 institutions in survey starting June 2013).

20. *Campus Conservation Nationals 2014*, CAMPUS CONSERVATION NAT'L, <http://www.competetoreduce.org/2014> (last visited Jan. 24, 2015) (participation by 109 universities and colleges, covering 1,330 buildings and 265,000 students and staff).

21. *461 Colleges and Universities Nationwide Recover 89.1 Million Pounds of Organic and Recyclable Materials During RecycleMania*, RECYCLEMANIA (Apr. 14, 2014), [http://recyclemaniacs.org/sites/default/files/RecycleMania%202014%20Winners%20Release\\_4%2014%2014.pdf](http://recyclemaniacs.org/sites/default/files/RecycleMania%202014%20Winners%20Release_4%2014%2014.pdf).

22. *See* ASA DIEBOLT & TIMOTHY DEN HERDER-THOMAS, ASS'N FOR THE ADVANCEMENT OF SUSTAINABILITY IN HIGHER EDUC., CREATING A CAMPUS SUSTAIN-



“Roadmap to a Green Campus” and “Guide to Transforming Your Campus, Community & Career”;<sup>23</sup> guides sponsored by philanthropic foundations, such as the Jessie Ball duPont Fund’s “Financing Sustainable Energy Projects at Small Liberal Arts Colleges”;<sup>24</sup> and other guidance and encouragement, such as “Campus Sustainability Best Practices: A Resource for Colleges and Universities,” a compilation of practices in 50 areas of operations from campuses across the country, prepared for the Massachusetts Executive Office of Energy and Environmental Affairs.<sup>25</sup>

## B. New Campus Decision-Makers and Funding Processes

The campus sustainability movement spawned a range of funds, new decision-makers, and funding processes outside of ordinary campus planning, maintenance, and building organizations. Typically, these funds target projects going beyond the traditional maintenance of buildings and grounds, such as retrofitting buildings to decrease energy usage, installing renewable energy technologies, implementing equipment to reduce water consumption, expanding placements of recycling bins, and restoring native habitats. Many of these projects aim at being groundbreaking and have substantial uncertainties in their costs and benefits.<sup>26</sup>

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ABILITY REVOLVING LOAN FUND: A GUIDE FOR STUDENTS (Apr. 2007), *available at* <http://www.aashe.org/resources/pdf/CERF.pdf>.

23. See *The Center for Green Schools*, USGBC, <http://www.centerforgreenschools.org/home.aspx> (last visited Jan. 24, 2015); see also *Roadmap to a Green Campus*, U.S. GREEN BLDG. COUNCIL (2010), <http://centerforgreenschools.org/resources.aspx> (follow “Roadmap to a Green Campus” hyperlink); U.S. GREEN BLDG. COUNCIL, *GUIDE TO TRANSFORMING YOUR CAMPUS, COMMUNITY & CAREER*, (2012), *available at* [http://centerforgreenschools.org/docs/USGBC\\_StudentsGuide.pdf](http://centerforgreenschools.org/docs/USGBC_StudentsGuide.pdf).

24. JEFFREY HUGHES & JENNIFER WEISS, ENVTL. FIN. CTR. UNIV. N.C. CHAPEL HILL *FINANCING SUSTAINABLE ENERGY PROJECTS AT SMALL LIBERAL ARTS COLLEGES*, (May 2013), <http://www.dupontfund.org/wp-content/uploads/2014/01/energy-conservation.pdf> [hereinafter *DUPONT FUND*].

25. STEPHANIE SOFER & JAMIE POTTERN, MASS. EXECUTIVE OFFICE OF ENERGY AND ENVTL. AFFAIRS, *CAMPUS SUSTAINABILITY BEST PRACTICES: A RESOURCE FOR COLLEGES AND UNIVERSITIES* (Aug. 2008), *available at* <http://www.mass.gov/eea/docs/eea/lbe/lbe-campus-sustain-practices.pdf>.

26. See e.g., *Green Fund Project List – Digital Shower Timers Project*, UNIV. OF PA., <http://www.upenn.edu/sustainability/programs/green-fund/digital-shower-timers-project> (last visited Jan. 24, 2015):

The Digital Shower Timer Project’s goals are to not only save water, decreasing Penn’s water footprint, but also encourage lifelong sustainable conservation policies. 200 digital shower timers, divided evenly between Hill and one of the Quad houses, were installed during Summer 2012. The project team will monitor water usage results on a monthly basis. Different signs and techniques will be used [on] different halls of the same dorm and analyzed to discover the most effective timer and signage combination.

Among other objectives, student leadership in funding decisions is intended to make the project selection process responsive to student environmental concerns, provide learning opportunities for students, and link new student-approved fees to empowering students in allocation decisions. In some cases, funding committees tap faculty expertise in environmental engineering, energy systems, biofuels, and other areas. Often, universities form committees representing diverse campus interests and personnel in the spirit of uniting the institution in pursuing sustainability and giving it a “green” identity.

Many of the new participants in campus sustainability decisions bring enthusiasm and specific expertise, but lack experience in grant management, project evaluation and other fields related to internal controls and learning from experience. Additionally, the short-term nature of these appointments and *ad hoc* organization of decision-makers does not foster the development of expertise or investment of resources in monitoring and evaluating project performance. While these committees devote substantial efforts to selecting worthwhile projects, they generally do so without studying evaluations of past projects and without requiring monitoring and assessment so that future decision-makers could leverage the experience of projects.

A few examples reflect these new decision-makers and funding processes:

1. *Committees with Students Comprising all Voting Members.*

Oregon State University’s Student Sustainability Initiative Fee Board created the Sustainable Energy Revolving Loan Fund in 2010. Through annual contributions of twenty-five dollars per student and other funding, about \$300,000 was available for financing projects in 2014-15. Decisions on which projects to fund are made

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*Id.* For example, replacing an incandescent bulb with a compact fluorescent lamp yields proven, low-risk savings in energy and costs. A campus fund may finance a range of strategies (with differences across classroom, laboratory, dining, residence, sports and administrative buildings) seeking to optimize life-cycle savings and user satisfaction by combining such replacements with occupancy sensors, energy control systems, increased natural lighting, signs encouraging building users to turn off lights, LEDs, dimmers and other changes. Similarly, funds may support a range of technologies and other changes targeting reductions in waste production and water consumption (water bottle refilling stations; low-flow showers, sinks and toilets; reuse of semi-treated waste water for landscaping; green roofs; rain barrels; eliminating trays in dining halls; banning on-campus sales of bottled water; etc.). In seeking advances, campus funds may decide that various strategies are worth trying; actual measurements from experience will show that some projects turn out to be less desirable than others in terms of costs and benefits.

by a board with five voting members (all students) and four non-voting members (two students and two faculty). Staff of the university's Sustainability Office provides administrative and technical support for the fund and connection to the university's strategic initiatives. The fund supports energy efficiency upgrades to buildings. Some projects are large and complex; the student committee approved \$170,000 for a water-heating project in 2013.<sup>27</sup>

At Illinois State University, "in response to the student body's desire to further sustainability on campus," the administration in 2010 created an \$180,000 fund (financed by \$45,000 annually for four years) managed by the Student Sustainability Committee. This committee was established by the Student Government Association, and is comprised of four voting members from the Student Government Association and five voting members from the student body at large (including one from the Association of Residence Halls).<sup>28</sup>

As an example at a small, private university, starting in 2012 the Clark University (Massachusetts) Undergraduate Student Council allocated \$20,000 per semester towards funding campus sustainability initiatives. A committee of five students, including one representative of the Student Council, manages this fund; the Campus Sustainability Coordinator (university staff) is a non-voting member.<sup>29</sup>

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27. See *Sustainable Energy Revolving Loan Fund (SERLF)*, OR. STATE UNIV., <http://sli.oregonstate.edu/ssi/please-review/funding-revolving-loan-fund/revolving-loan-fund> (last visited Jan. 24, 2015); see also CASSIDY RADLOFF ET AL., OR. STATE UNIV., STUDENT SUSTAINABILITY INITIATIVE FY15 13 (Jan. 24, 2014), available at <http://oregonstate.edu/sifc/sites/default/files/ssi.pdf>; Oregon State University, BILLION DOLLAR GREEN CHALLENGE, <http://greenbillion.org/participant/oregon-state-university/> (last visited Jan. 24, 2015); SUSTAINABLE ENDOWMENTS INST., GREENING THE BOTTOM LINE 26 (2012), available at <http://www.aashe.org/files/documents/resources/greening-the-bottom-line-2012.pdf>; *Sustainable Campus Program Advisory Committee Sub-Committee Bylaws*, SUSTAINABLE CAMPUS PROGRAM ADVISORY COMM. (June 29, 2012), available at [http://www.sustainableauraria.org/SCPAC\\_Bylaws\\_2012.pdf](http://www.sustainableauraria.org/SCPAC_Bylaws_2012.pdf) (committee of student members managing student Sustainable Campus Program fee at four institutions in Denver area).

28. *Sustainability ISU*, ILL. STATE UNIV. 4 (Mar. 2011), [http://sustainability.illinoisstate.edu/downloads/February-March2011\\_000.pdf](http://sustainability.illinoisstate.edu/downloads/February-March2011_000.pdf); *Sustainability Fund accepting applications*, REPORT (Feb. 4, 2014), <http://mediarelations.illinoisstate.edu/report/1314/feb4/sustainability.asp>; *Student Sustainability Fund*, ILL. STATE UNIV., <http://sustainability.illinoisstate.edu/student-involvement/fund> (last visited Jan. 24, 2015); *Student Sustainability Committee*, ILL. STATE UNIV., <http://sustainability.illinoisstate.edu/student-involvement/ssc/> (last visited Jan. 24, 2015).

29. Clark University students apply for positions on this committee and are selected by a joint decision by the Student Council's vice-president, the Sustainability Coordinator, and the Sustainability Task Force (comprised of representatives from the faculty, administration, and graduate and undergraduate students). Along with oversight by the Student Council and the Campus Sustainability Coordinator, a new advisory board meets with this committee at least once per semes-

2. *Student-led Committees With Staff, Faculty, and Administration Members.*

Western Washington University's Green Energy Fee grant program started in 2010. Approved by eighty percent of the student body, fees of \$0.70 per credit collect about \$300,000 annually for grant funding. A committee oversees the operation of the grant program, including reviewing project applications. Of the seven voting members, four are students (including the chair and vice chair), two are faculty, and one is a representative from the university's administration (Business and Financial Affairs). Three of the large, complex projects funded in 2011 and 2013 were for amounts ranging from \$167,000 to \$220,000.<sup>30</sup>

In 2007, the University of Colorado at Boulder's student government allocated \$521,186 from its operating reserves budget to initiate an Energy and Climate Revolving Fund, which finances energy-efficiency upgrades to campus buildings. To review and approve funding for projects, the student government set up a board chaired by the chair of the student government finance board. The board also includes other students (a member of the student Legislative Council and two students-at-large), university staff (directors of the Facilities Management Office of Sustainability, Environmental Center, and Student Organizations Finance Office as well as facility managers), and faculty appointed by the provost. In 2010, a loan of \$131,000 was approved for a bundle of building retrofits.<sup>31</sup>

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ter; the advisory board is comprised of a business manager, physical plant representative, faculty member, and administrative staff member, all selected by the student committee members. *Fast Facts*, CLARK UNIV., <http://www.clarku.edu/fastfacts.cfm> (last visited Jan. 24, 2015); Harrison Bass et al., *Clark University Student Sustainability Fund Operational Guidelines*, CLARK UNIV. (Apr. 2012), [http://www.clarku.edu/offices/campussustainability/pdfs/Student\\_Sustainability\\_Fund.pdf](http://www.clarku.edu/offices/campussustainability/pdfs/Student_Sustainability_Fund.pdf); *Sustainable Clark*, CLARK UNIV., <http://www.clarku.edu/offices/campusSustainability/initiatives/mission.cfm> (last visited Jan. 24, 2015).

30. W. WASH. UNIV., GREEN ENERGY FEE ANNUAL REPORT 2012-2013 3-5 (2013), available at [http://www.wvu.edu/sustain/programs/gef/about/gef%20annual%20report%202012-2013%20\(final\).pdf](http://www.wvu.edu/sustain/programs/gef/about/gef%20annual%20report%202012-2013%20(final).pdf) (large projects were for a solar array for a building, solar thermal collectors to heat a pool, and interactive campus energy consumption displays); W. WASH. UNIV., GREEN ENERGY FEE COMMITTEE CHARGE & CHARTER, (Oct. 17, 2012), available at [http://www.wvu.edu/sustain/programs/gef/about/gef%20annual%20report%202012-2013%20\(final\).pdf](http://www.wvu.edu/sustain/programs/gef/about/gef%20annual%20report%202012-2013%20(final).pdf); see also *Appalachian State University Renewable Energy Initiative – Committee Members*, APPALACHIAN STATE UNIV., <http://rei.appstate.edu/pagesmith/3> (last visited Jan. 24, 2015) (committee with majority student members together with faculty and staff representatives).

31. *Energy and Climate Revolving Fund*, UNIV. OF COLO. BOULDER, <http://www.colorado.edu/center/cu-and-energy/energy-and-climate-revolving-fund> (last visited Jan. 24, 2015); REBECCA CAINE & NATHANIEL HERZ, SUSTAINABLE ENDOWMENTS INST., UNIV. OF COLO. BOULDER: ENERGY AND CLIMATE REVOLVING FUND 6, 9 (Jan.

In 2007, ninety-one percent of undergraduate students at the University of Maryland voted for increasing student fees by twelve dollars annually to create a University Sustainability Fund (totaling about \$300,000 in grants available annually). A new Student Advisory Subcommittee was formed for selecting projects to finance. This committee is chaired by the undergraduate student serving on the University Sustainability Council.<sup>32</sup> This committee includes two other undergraduate students, one faculty member, and one staff member who serve on the University Sustainability Council; the staff director of the Office of Sustainability serves as a non-voting member. In the 2013-2014 academic year, one farm project received a grant of \$124,000, and three others received grants of \$40,000 to \$50,000.<sup>33</sup>

Similarly, The Green Initiative Fund at the University of California, Berkeley selects projects through a committee consisting of students, faculty and staff, on which students have the majority vote. Student fees of six dollars per semester supply the funds, totaling approximately \$300,000 annually.<sup>34</sup>

### 3. *Some Other New Decision-Makers.*

The following are among other structures of new *ad hoc* committees that administer campus sustainability funds: (a) Iowa State University's Live Green Revolving Loan Fund was created in 2008 with three million dollars in funding; it is managed by an advisory committee consisting of four administrators, one faculty member,

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2012), available at [http://greenbillion.org/wp-content/uploads/2012/01/CU-Boulder\\_University-3.pdf](http://greenbillion.org/wp-content/uploads/2012/01/CU-Boulder_University-3.pdf). The "bundle featured projects including window and door replacements, innovative lighting technology like LED light retrofits and occupancy sensors, insulation of the water heater and ceilings and the installation of variable-speed drives, new heat reclaimers, refrigeration temperature monitoring, and the installation of new steam-trap systems." CAINE & HERZ, *supra*, at 9.

32. The University Sustainability Council is chaired by the university's Vice President for Administration and Finance, with members including other senior administration, one undergraduate student, one graduate student, faculty and staff. *Sustainability Council*, UNIV. OF MD., [http://www.sustainability.umd.edu/content/about/sustainability\\_council.php](http://www.sustainability.umd.edu/content/about/sustainability_council.php) (last visited Nov. 9, 2014).

33. *Maryland By-Laws*, *supra* note 4, at 1-2; *University Sustainability Fund 2013-2014 Grant Recipients*, UNIV. OF MD., [http://www.sustainability.umd.edu/content/about/fund\\_recipients.php](http://www.sustainability.umd.edu/content/about/fund_recipients.php) (last visited Nov. 9, 2014).

34. See *Welcome to The Green Initiative Fund*, UNIV. OF CAL. BERKELEY, <http://tgif.berkeley.edu/> (last visited Nov. 9, 2014); see also *Bylaws of the Sustainability Fund*, N.C. STATE UNIV. 2, <http://sustainability.ncsu.edu/wp-content/uploads/2014/01/Sustainability-Fund-Constitution-and-Bylaws.pdf> (last visited Nov. 9, 2014) (fund with majority student members).

one staff member, and one student representative;<sup>35</sup> (b) Mississippi State University's Green Fund is controlled by a committee with administrators, students, and staff—co-chaired by the Vice President of Campus Services and Sustainability Coordinator, with two students, the Associate Vice President of Student Affairs, General Counsel, Vice President of Budget and Planning, and Energy and Mechanical Engineer;<sup>36</sup> (c) the University of Pennsylvania's Green Fund Review Board is chaired by the Environmental Sustainability Coordinator; the other eight members include positions for two students, facilities staff, faculty, and an administrator;<sup>37</sup> and (d) for the twelve million dollars Harvard Green Revolving Fund, project approval decisions (up to \$500,000 per project) are made by a committee composed of a large number of facilities staff (including staff involved with new construction, existing projects, renovations, consulting, energy auditing, commissioning and finance) and administrators; it is co-chaired by the Director of the Office for Sustainability.<sup>38</sup>

### C. Range of Provisions in Funding Agreements

The university and college committees managing campus sustainability grants and loans typically have broad missions with substantial discretion in selecting projects and amounts for funding.<sup>39</sup> The committee members solicit applications from students, faculty,

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35. CHRISTINA BILLINGSLEY, IOWA STATE UNIVERSITY: LIVE GREEN REVOLVING LOAN FUND 5 (OCT. 2011), *available at* [http://greenbillion.org/wp-content/uploads/2012/01/Iowa-Case-Study\\_v5.pdf](http://greenbillion.org/wp-content/uploads/2012/01/Iowa-Case-Study_v5.pdf).

36. *Sustainability Initiatives – Green Fund*, MISS. STATE UNIV., <http://www.sustainability.msstate.edu/initiative/index.php> (last visited Nov. 9, 2014).

37. *Green Fund*, UNIV. OF PA., <http://www.upenn.edu/sustainability/programs/green-fund> (last visited Nov. 9, 2014).

38. ROBERT FOLEY, HARVARD UNIVERSITY: GREEN LOAN FUND 4-5 (Sept. 2011), *available at* <http://greenbillion.org/wp-content/uploads/2011/10/Harvard.pdf>.

39. *See e.g., Maryland By-Laws, supra* note 3, at 1: The Student Sustainability Fund provides funding for projects that promote environmental sustainability, and positively impact and enhance the student experience at [University of Maryland (UMD)]. The Student Sustainability Fund will allocate funds to projects that increase the use of renewable energy on campus and/or in the local community, increase the energy efficiency of our facilities, reduce the amount of waste created and material resources used on campus, encourage sustainable behaviors, and integrate sustainability into teaching, research, and service at UMD. *Id. See* ASSOC. STUDENTS OF W. WA. UNIV., *Green Energy Fee Program – Rules of Operation* 1 (July 23, 2013), *available at* <http://www.wvu.edu/sustain/programs/gef/about/GEF%20Rules%20of%20Operation.pdf>. “Projects funded through the Green Energy Fee Program are evaluated based on their ability to: Increase Student Involvement and Education; Reduce the University’s Environmental Impact; and Create an Aware & Engaged Campus Community.” *Id.*

and/or facilities staff. The screening process relies on the committees' reviews of project descriptions prepared by potential recipients. As part of these descriptions, the applicants generally provide projections of the projects' impacts on various measures of financial and environmental performance, as well as other descriptions of the projects' contributions to the campus.<sup>40</sup> The applicants' projections usually form the central focus of the funding process. The applicant may be required to provide supporting documentation,<sup>41</sup> or use tools for estimating costs and benefits supplied by the committee.<sup>42</sup>

Applicants' projections may reflect national or regional averages; however, the actual experience at a particular campus may be substantially different because of human behaviors, local weather conditions, characteristics of specific buildings, *etc.* In cases of newer technologies, the applicants' projections may reflect limited experience with actual installations or extrapolations from controlled testing. Moreover, applicants may rely on the analyses of vendors having an incentive to puff – and not guarantee—the performance of their products and services. The Jessie Ball duPont Fund offers this guidance to colleges: “Every sustainable energy project involves some degree of uncertainty. Measurement and verification is critical to understanding the actual energy savings associated with energy improvement projects in a way that enables the college to overcome the uncertainty and successfully execute its sustainable energy plan.”<sup>43</sup>

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40. See *e.g.*, *Sustainable Energy Revolving Loan Fund Project Application*, OR. STATE UNIV. 2, [http://fa.oregonstate.edu/files/sustainability/docs/serlf\\_application.pdf](http://fa.oregonstate.edu/files/sustainability/docs/serlf_application.pdf) (last visited Jan. 24, 2015) (“Estimated Annual Energy Savings: Show Calculations, Rationale and/or Methodology; Attach additional documentation if needed,” “Estimated Project Costs”).

41. See *e.g.*, *Sustainability Fund Application*, ILL. STATE UNIV. 2 (2013), available at <http://sustainability.illinoisstate.edu/student-involvement/fund.shtml>.

42. See *e.g.*, *TGIF Metrics Spreadsheet*, THE GREEN INITIATIVE FUND – UNIV. OF CAL., BERKELEY, <http://tgif.berkeley.edu/index.php/apply-3/spring-grants> (last visited Jan. 24, 2015).

43. DUPONT FUND, *supra* note 24, at 10. The Sustainable Endowments Institute and AASHE stated:

First, fund managers may use front-end savings estimates based on engineering analysis. This method relies on technology specifications and assumed usage patterns to predict future performance. This is the most straightforward and inexpensive approach, but it will not capture any deviations in the event that a project performs better or worse than expected. Second, fund managers may retroactively calculate savings based on actual performance. This entails using a measurement and verification (M&V) approach to directly meter savings while accounting for confounding factors like weather and usage patterns. This approach is more accurate but also more costly and labor-intensive.

The committee members may have little indication or appreciation of the uncertainties surrounding some applicants' projections. It is important to recognize and develop processes to address these uncertainties. Yet, the application and review process should not require or expect highly accurate projections of direct and indirect impacts; such precision could deter innovative projects. Also, the process should be flexible in the face of substantial costs to measure the impacts of certain projects, whether direct effects, such as energy or water savings in buildings that are not individually metered;<sup>44</sup> indirect effects, such as changes in students' behaviors or suppliers' emissions; or impacts of small projects.<sup>45</sup>

As explained in Sections III and IV *infra*, grant making bodies often deal with uncertainties in predicting projects' effects by monitoring and evaluating the actual performance of projects, both during implementation for mid-course corrections and in the years of operation. These data and analyses can be used to inform future decisions on similar projects, and to make applicants and their vendors more accountable for their projections. Yet, many recipients of campus sustainability grants and loans provide little information to the committee members on the implementation process and post-implementation experience.

Different institutions take different approaches to monitoring actual performance of sustainability projects. On the one hand, the Director of Environment and Sustainability at Thompson Rivers University in Canada stated a standard based on measuring: "There must be a way to prove that projected savings will in fact be achieved."<sup>46</sup> Similarly, Weber State College's Energy and Sustainability Manager said: "Make sure you have an accurate and documented method for reporting energy savings. If those numbers are loose, you will lose administrative support."<sup>47</sup> North Carolina State University places the responsibilities on the student-led Sustainability Fund Advisory Board to establish project monitoring to

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*Id.*; see also INDVIK, *infra* note 45, at 14.

44. GREENING THE BOTTOM LINE, *infra* note 46, at 32.

45. The University of Denver uses project specifications and engineering estimates for smaller projects; for larger projects, the school performs monitoring and verification of baseline and post-implementation conditions. JOE INDVIK ET.AL., GREEN REVOLVING FUNDS: AN INTRODUCTORY GUIDE TO IMPLEMENTATION & MANAGEMENT 14 (2013), available at [http://greenbillion.org/wp-content/uploads/2013/01/GRF\\_Implementation\\_Guide.pdf](http://greenbillion.org/wp-content/uploads/2013/01/GRF_Implementation_Guide.pdf).

46. SUSTAINABLE ENDOWMENTS INST., GREENING THE BOTTOM LINE 33 (2012), available at <http://www.aashe.org/files/documents/resources/greening-the-bottom-line-2012.pdf>.

47. GREENING THE BOTTOM LINE, *supra* note 46, at 34.



ensure accountability for funds allocated, and to document a project's environmental, social, economic, or other impacts.<sup>48</sup>

On the other hand, the Coordinator of Business and Finance at Harvard's Sustainability Office observed a proliferation of projects that are managed through projected savings without undertaking the expenses of verifying impacts of specific actions.<sup>49</sup> Along these lines, a Carleton College facilities manager noted that actual project impacts could not be broken out in some cases because of how the campus was metered or the numerous variables affecting the levels that were metered.<sup>50</sup>

Among the institutions that pursue measurement of actual impacts, the funding agreements for projects reflect different approaches. The Oregon State University Sustainable Energy Revolving Loan Fund limits monitoring and evaluation to a short term. This fund invites applicants to describe project objectives in reference to as many of the fund's principles as possible, covering energy, and water cost savings as well as making the university a national leader in energy independence, educating the community about the potential and benefit of energy efficiency and renewable energy, and saving building maintenance expenses.<sup>51</sup> Most of these impacts cannot be verified during the installation, when completing the installation, or shortly thereafter. Nevertheless, the project reporting required in the loan agreement is limited. During the course of implementation, the recipient files with the committee an agreed number of updates pertaining to setbacks that might affect the project timeline or overall project success, with supporting documentation.<sup>52</sup> When the project is substantially complete, the recipient files a closeout form reflecting actual costs.<sup>53</sup> Finally, within ninety days after filing the closeout form, the recipient submits to the committee a short report reviewing the project successes or challenges, describing changes from the original application, and

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48. N.C. STATE UNIV., THE SUSTAINABILITY FUND CONSTITUTION 3-4 (2014), available at <http://sustainability.ncsu.edu/wp-content/uploads/2014/01/Sustainability-Fund-Constitution-and-Bylaws.pdf>.

49. GREENING THE BOTTOM LINE, *supra* note 46, at 33.

50. *Id.*

51. *Sustainable Energy Revolving Loan Fund Information & Instructions for Applicants*, OR. STATE UNIV., [http://fa.oregonstate.edu/files/sustainability/docs/serlf\\_instructions.pdf](http://fa.oregonstate.edu/files/sustainability/docs/serlf_instructions.pdf) (last visited Jan. 24, 2015).

52. *Sustainable Energy Revolving Loan Fund Loan Agreement Form*, OR. STATE UNIV., [http://fa.oregonstate.edu/files/sustainability/docs/serlf\\_loanagreement.pdf](http://fa.oregonstate.edu/files/sustainability/docs/serlf_loanagreement.pdf) (last visited Jan. 24, 2015).

53. *Sustainable Energy Revolving Loan Fund Closeout Form*, OR. STATE UNIV., [http://fa.oregonstate.edu/files/sustainability/docs/serlf\\_closeoutform.pdf](http://fa.oregonstate.edu/files/sustainability/docs/serlf_closeoutform.pdf) (last visited Jan. 24, 2015).

updating estimates for energy savings.<sup>54</sup> There is no process for monitoring impacts that may develop over several years, such as actual energy cost savings over several seasons, equipment failures and replacements, effects on building maintenance costs, or community education.

The Western Washington University Green Energy Fee Grant Program also reflects measurement of actual impacts limited to a short time period. For large grants (\$2,000 to \$300,000), proposals must have clear and measurable outcomes as well as a method to collect quantitative and/or qualitative sustainability metrics to evaluate the project. However, the final report is due in May following completion of implementation (end of the academic year for the committee).<sup>55</sup>

In contrast, some institutions incorporate longer-term monitoring and reporting obligations into their funding agreements. If a project is expected to have on going benefits after completion of the implementation (such as cost savings), the University of Maryland's Student Sustainability Fund requires tracking impacts and annual reporting to the committee for at least three years.<sup>56</sup> Other multi-year monitoring and reporting requirements appear in funding agreements for Clark University and the University of Maine.<sup>57</sup> The annual report for Maine's Green Loan Fund must present analyses of the economic performance of each project and the aggregate of prior projects.<sup>58</sup>

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54. *Sustainable Energy Revolving Loan Fund Information & Instructions for Applicants*, *supra* note 51, at 3.

55. *Green Energy Fee Grant Program: Apply*, W. WA. UNIV., <http://www.wwu.edu/sustain/programs/gef/apply/> (last visited Nov. 9, 2014); *Green Energy Fee Grant Program Large Grant Proposal Toolkit 2013-2014*, W. WA. UNIV. 3, 5, 12 (2013), available at [http://www.wwu.edu/sustain/programs/gef/apply/gef\\_large%20grant%20proposal%20toolkit%202013-2014%202.pdf](http://www.wwu.edu/sustain/programs/gef/apply/gef_large%20grant%20proposal%20toolkit%202013-2014%202.pdf).

56. *Maryland By-Laws*, *supra* note 3, at 3. Applicants must answer these questions, among others: "(1) How will you measure and evaluate your project's success?"; (2) "What is the expected life span of the project?"; (3) "Who will be responsible for overseeing it during that time?"; and (4) "How will you ensure the sustained existence/maintenance of this project (including reporting requirements) once you are no longer involved?" *Id.*; see also, *Sustainability Fund Project Grant Application*, UNIV. OF MD. (July 2014), [http://www.sustainability.umd.edu/content/about/fund\\_faqs.php](http://www.sustainability.umd.edu/content/about/fund_faqs.php).

57. Harrison Bass et al., *Clark University Student Sustainability Fund Operational Guidelines*, CLARK UNIV. 6 (Apr. 2012), [http://www.clarku.edu/offices/campus-sustainability/pdfs/Student\\_Sustainability\\_Fund.pdf](http://www.clarku.edu/offices/campus-sustainability/pdfs/Student_Sustainability_Fund.pdf); UNIV. OF ME. OFFICE OF SUSTAINABILITY & UNIV. OF ME. FOUND, *THE UNIVERSITY OF MAINE GREEN LOAN FUND 2* (2013), available at [http://umaine.edu/sustainability/files/2014/01/Green\\_Loan\\_Fund\\_2013\\_v3.pdf](http://umaine.edu/sustainability/files/2014/01/Green_Loan_Fund_2013_v3.pdf).

58. THE UNIVERSITY OF MAINE GREEN LOAN FUND, *supra* note 57, at 5.

As a further illustration, The Green Initiatives Fund at the University of California, Berkeley, asks applicants about their goals for quantifiable sustainability impacts and how they will measure the impacts after their projects are implemented in order to see if they met their goals; they are required to report the monitoring data to the committee. Such on-going, multi-month monitoring data following 2010 and 2011 grants for hydration stations yielded an estimate of impacts in terms of reduced sales of bottled water, which helped support a grant in 2012 for additional stations (total funding \$79,000).<sup>59</sup> The Berkeley fund's annual report collects performance measures from projects funded in that year as well as in prior years.<sup>60</sup>

#### D. Implications for Program Success, Support, and Student Training

To summarize the preceding descriptions, concerns about climate change and other environmental issues spurred a proliferation of efforts to improve the operations of universities and colleges; institutions established new funds to make grants and loans for campus sustainability, often in connection with students' votes to assess new fees on their bills; new committees were formed to manage the allocation of these funds to projects, often with short-term, *ad hoc* membership and led by students; the organization and processes of these committees focus on reviewing applications for new projects using the applicants' predictions of impacts, not evaluating past or on-going actions; and many funding agreements require limited monitoring and reporting of actual costs and benefits, in both scope and time frame.

Recognizing that the standard should not be "perfect" assessments, increased monitoring and evaluation would have at least seven positive implications for the success of campus sustainability projects, support for these funds, and student training:

1. Measurements from completed or on-going projects on that campus could provide greater accuracy in assessing the expected costs and benefits of proposals, leading to better allocations of funds. Funding decisions rely too heavily on

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59. *Installation of Water Bottle Refill Stations and Fountain Retrofits*, THE GREEN INITIATIVE FUND UNIV. OF CAL., BERKELEY, <http://tgif.berkeley.edu/index.php/funded-projects/grant-cycle/2012-projects/12-tgif/funded-projects/86-installation-bottle-refill> (last visited Nov. 9, 2014).

60. *See, e.g.*, THE GREEN INITIATIVE FUND, UNIV. OF CAL. BERKELEY, ANNUAL REPORT 2012 (2012), available at [http://tgif.berkeley.edu/docs/2011-2012\\_tgif\\_annual\\_report.pdf](http://tgif.berkeley.edu/docs/2011-2012_tgif_annual_report.pdf).

applicants' predictions of impacts based on engineering estimates or averages. Substantial uncertainties surround many proposed campus actions.

2. Measurements of actual impacts would enable improved structuring of financings, such as loan repayments, which could reflect net savings realized.
3. Mid-term evaluations of projects would in some cases point to opportunities to improve implementation or adjust the financing and design for subsequent actions.
4. Monitoring and evaluating implementations would, in some cases, make recipients more efficient, increase the accuracy of predicted impacts for other projects, and reveal problems in the design, selection of vendors, and planning for certain actions.
5. The testing and evaluation expertise of faculty together with free or low-cost student labor could enable progress in designing and predicting the impacts of innovative sustainability projects. Campus projects provide opportunities for research, academic publications, and guidance to other sustainability programs.
6. Building on measures of actual impacts and credible evaluations of projects, supporters of a fund would be better able to communicate its successes and opportunities to the campus community and funders.
7. Students would experience field learning in measurement, evaluation, and grant management. As discussed in the next two sections, these skills are valuable and associated with major funders' efforts in the environmental and other sectors. In proceeding without strong monitoring and evaluation, universities are providing misleading experiences to students involved in funding decisions and projects.

Although the spurt of campus sustainability funds and decision-makers has many benefits, institutions should consider lessons in project evaluation and grant management reflected in processes for U.S. federal government agencies and the World Bank, as described in the next two sections. Obviously, these processes have flaws in implementation and design; are generally applied to larger grants and loans than pertain to campus sustainability funds; and were developed in response to political forces and other considera-

tions which differ from those at universities and colleges. Nevertheless, as shown in the case study in the final section of this article, the federal agencies and World Bank provide guidance that could improve the by-laws and funding agreements for campus sustainability funds.

### III. GUIDANCE FROM PROJECT EVALUATION AND GRANT MANAGEMENT BY THE U.S. FEDERAL GOVERNMENT

The federal agencies have had, and continue to struggle with, great challenges in managing programs that make grants, implement other projects, and apply regulations. Despite decades of internal controls, audit and investigation organizations, and reporting to Congress, the agencies encounter fraud, waste, and abuse as well as poorly designed projects. Constraints on and guidance for their processes through legislation, Executive Orders, and guidelines are still evolving. Furthermore, the political conditions and budgets of the federal agencies differ greatly from those of campus sustainability funds.

Yet, campus sustainability funds could learn much from the organizational and operational tools that have been applied to the federal agencies. This section describes the efforts to improve processes at the federal agencies in terms of project evaluation, grant management, and retrospective review of regulations.

#### A. Program Evaluation

Acknowledging the uncertainties inherent in designing and implementing federal programs,<sup>61</sup> many statutes include provisions aimed at monitoring the effectiveness of the individual programs they fund. This section highlights three acts requiring extensive evaluations of hundreds of programs across a wide range of federal agencies.<sup>62</sup> Among the other important tools and organizations used in evaluating federal programs are systems of internal controls

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61. See *e.g.*, *Nat'l Ass'n of Regulatory Util. Comm'rs v. Fed. Comm'n Comm'n*, 737 F.2d 1095, 1141 (D.C. Cir. 1984), *cert. denied*, 496 U.S. 127 (1985) (upholding agency decision on the basis that the agency applied "reasoned guesswork" in the face of time pressures and difficult, costly measurement problems; one cannot "divorce the difficulty of the regulatory dilemma from the reasonableness of its resolution"); see also W. Lavey, *Doctrine of Administrative Inconvenience at the Federal Communications Commission*, 17 *LOY. U. CHI. L. J.* 617 (1986).

62. "Federal agencies" refers to the departments, administrative agencies and other federal government entities covered by the relevant statute, as defined therein.

within agencies as well as requirements for budgets and tracking;<sup>63</sup> reports addressing individual programs by the Congressional Research Service<sup>64</sup> (CRS) and Government Accountability Office<sup>65</sup> (GAO), federal government organizations outside of the agencies; and peer-reviewed studies by academics and consultants outside of the federal government.<sup>66</sup>

1. *Three Statutes Mandating Wide-Ranging Evaluations of Federal Agencies' Programs*

One statute described below promotes transparency, accountability, and effective program management through reports to Congress and the Executive Branch's Office of Management and Budget (OMB) as well as internal agency reviews. The other two statutes described here rely on audits and investigations by Executive Branch employees in organizations established to promote independent, objective analyses.

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63. Federal Managers' Financial Integrity Act of 1982, Pub.L. No 97-255, 96 Stat. 814 (1982); U.S. OFF. OF MGMT. & BUDGET, CIRCULAR NO. A-123, Management's Responsibility for Internal Control (2004) ; U.S. OFF. OF MGMT. & BUDGET, CIRCULAR NO. A-133, Audits of States, Local Governments, and Non-Profit Organizations (2003).

64. See e.g., MARC HUMPHRIES, CONG. RESEARCH SERV., R42432, U.S. CRUDE OIL AND NATURAL GAS PRODUCTION IN FEDERAL AND NON-FEDERAL AREAS, (2014); LYNN J. CUNNINGHAM & BETH A. ROBERTS, CONG. RESEARCH SERV., R40913, RENEWABLE ENERGY AND ENERGY EFFICIENCY INCENTIVES: A SUMMARY OF FEDERAL PROGRAMS (2013); JAMES E. MCCARTHY & CLAUDIA COPELAND, CONG. RESEARCH SERV., R41561, EPA REGULATIONS: TOO MUCH, TOO LITTLE, OR ON TRACK? (2014).

65. See e.g., *Standards for Internal Control in the Federal Government*, GOV'T ACCOUNTABILITY OFFICE (1999), <http://www.gao.gov/special.pubs/ai00021p.pdf>; *DOD Financial Management: Effect of Continuing Weaknesses on Management and Operations and Status of Key Challenges*, *Hearing on GAO-14-576 Before the Comm. On Homeland Sec. & Govtl. Affairs* (2014) (statement of Asif A. Khan, director, Financial Management and Assurance); GOV'T ACCOUNTABILITY OFFICE, GAO-13-283, HIGH-RISK SERIES: AN UPDATE (2013) (biennial report to Congressional committees calling attention to government operations identified by GAO as "high risk due to their greater vulnerabilities to fraud, waste, abuse, and mismanagement or the need for transformation to address economy, efficiency, or effectiveness challenges.").

66. See e.g., EVNTL. PROT. AGENCY, EPA COULD IMPROVE THE SMART WAY TRANSPORT PARTNERSHIP PROGRAM BY IMPLEMENTING A DIRECT DATA VERIFICATION PROCESS 7 n.7 (2012) [hereinafter EPA SMARTWAY REPORT], *available at* <http://www.epa.gov/oig/reports/2012/20120830-12-P-0747.pdf> (citing study of program by academic researchers subject to peer review); U.S. DEP'T OF ENERGY, RETROSPECTIVE BENEFIT-COST EVALUATION OF DOE INVESTMENT IN PHOTOVOLTAIC ENERGY SYSTEMS (2010), *available at* [http://www1.eere.energy.gov/analysis/pdfs/solar\\_pv.pdf](http://www1.eere.energy.gov/analysis/pdfs/solar_pv.pdf).

*a. Performance Goals, Measures, Reviews, and Reports*

The Government Performance and Results Act of 1993 (GPRA)<sup>67</sup> and the Government Performance and Results Modernization Act (GPRMA) of 2010<sup>68</sup> established a framework for program evaluation going beyond investigations, audits, and annual reviews. Intended to help restore the confidence of the American people in the federal government, the acts require federal agencies to set goals for program performance, measure results and publicly report on performance.<sup>69</sup> According to the United States Government Accountability Office (GAO), the GPRA:

Seeks to shift the focus of government decision making and accountability away from a preoccupation with the activities that are undertaken - such as grants dispensed or inspections made - to a focus on the results of those activities, such as real gains in employability, safety, responsiveness, or program quality.<sup>70</sup>

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67. Government Performance and Results Act of 1993, PUB. L. NO. 103-62, 107 Stat. 285 (1993) (codified in scattered sections of 5, 31 & 39 U.S.C.) The Congressional Research Service (CRS) observed:

GPRA 1993 stood in contrast with past initiatives that several Presidents pursued through their use of discretion. All of the initiatives were generally abandoned due to changes in Administration, a perception of unrealistic ambitions, or lack of congressional buy-in. The initiatives included the Lyndon B. Johnson Administration's Planning-Programming-Budgeting System (PPBS, 1965); the Richard M. Nixon and Gerald R. Ford Administrations' Management by Objectives (MBO, 1973); and the Jimmy Carter Administration's Zero-Base Budgeting (ZBB, 1977).

CLINTON T. BRASS, CONG. RESEARCH SERV., R42379, CHANGES TO THE GOVERNMENT PERFORMANCE AND RESULTS ACT (GPRA): OVERVIEW OF THE NEW FRAMEWORK OF PRODUCTS AND PROCESSES 1 n.3 (2012)[hereinafter CRS GPRA CHANGES]; see also Kravchuk, R. & Schack, *Designing Effective Performance-Measurement Systems under the Government Performance and Results Act of 1993*, 56 PUB. ADMIN. REV. 348 (1996); B. Radin, *The Government Performance and Results Act and the Tradition of Federal Management Reform: Square Pegs in Round Holes?*, 10 J. PUB. ADMIN. RESEARCH. & THEORY 111 (2000).

68. Government Performance and Results Modernization Act of 2010, PUB. L. NO. 111-352, 124 Stat. 3866 (2011).

69. Report of the Senate Committee on Governmental Affairs to accompany the Government Performance and Results Act of 1993, S. REP. NO. 103-58 (June 16, 1993). President William Clinton observed in signing the legislation:

The law simply requires that we chart a course for every endeavor that we take the people's money for, see how well we are progressing, tell the public how we are doing, stop the things that don't work, and never stop improving the things that we think are worth investing in.

William J. Clinton, *Remarks on Signing the Government Performance and Results Act of 1993 and an Exchange with Reporters* (Aug. 3, 1993), <http://www.presidency.ucsb.edu/ws/?pid=46945>.

70. *Reports on the Government Performance and Results Act*, GOV'T ACCOUNTABILITY OFFICE, <http://www.gao.gov/new.items/gpra/gpra.htm> (last visited Jan. 24, 2015). See S. Fitzsimmons & W. Lavey, *Social Economic Accounts System (SEAS): To-*

The GPRA attempts to promote accountability and integrate program evaluation into the budgetary decision-making process.<sup>71</sup> Federal agencies have to develop three types of plans. First, strategic plans cover five years and include: a comprehensive mission statement; description of general goals and objectives as well as the means of achievement; explanation of performance goals related to these general goals and objectives; identification of key factors that could affect the achievement; and description of program evaluations together with a schedule for evaluations.<sup>72</sup> Second, annual performance plans are submitted addressing program activities included in the agencies' budget requests.<sup>73</sup> Linked to the strategic plans, performance plans include the performance goals and indicators for the fiscal year (outcome and outputs measurements), describe the resources needed to meet the goals, and explain how the results are verified and validated.<sup>74</sup> Third, annual performance

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*ward a Comprehensive, Community-Level Assessment Procedure*, 2 SOC. INDICATORS RES. 389 (1976) (in describing connection with a federal experimental schools program, system of metrics to inform public policies regarding the effects of public investments on quality of life of individuals and social well-being of the community).

71. See Robert M. McNab & François Melese, *Implementing the GPRA: Prospects for Performance Budgeting in the Federal Government*, PUB. BUDGETING & FIN. 73, 74 (2003) (describing purpose of GPRA).

72. Government Performance and Results Act of 1993, PUB. L. NO. 103-62, 107 Stat. 285 (1993) (codified in scattered sections of 5, 31 & 39 U.S.C.); see also *Fund for Animals v. Williams*, 391 F. Supp. 2d 132, 137-39 (D.D.C. 2005) (agency's strategic plan does not create a binding obligation).

73. Government Performance and Results Act of 1993, 31 U.S.C. § 1115(b) (2012).

74. GPRA, § 4 (codified at 31 U.S.C. § 1115). 31 U.S.C. § 1115. According to the GPRA, "'outcome measure' means an assessment of the results of a program activity compared to its intended purposes," and "'output measure' means the tabulation, calculation, or recording of activity or effort and can be expressed in a quantitative or qualitative manner." 31 U.S.C. §§ 1115(h)(7-8). The EPA provides further clarification of these terms:

*Output*: An environmental activity or effort, and/or associated work products that are produced or provided over a specific period of time. Outputs may be quantitative or qualitative but must be measurable during an assistance agreement funding period.

*Outcome*: The result, effect, or consequence that will occur from carrying out an environmental program or activity that is related to an environmental or programmatic goal or objective. Outcomes may be environmental, behavioral, health-related, or programmatic in nature, must be quantitative, and may not necessarily be achievable within an assistance agreement funding period. EPA encourages recipients to identify outcomes wherever possible because they lead to environmental and/or public health improvement more clearly than outputs.

*Intermediate v End Outcomes*: Intermediate Outcomes can reasonably be expected to lead to the desired result or ultimate End Outcome of a project or program. For example, for an air pollution program assistance agreement, reductions in pollution emissions may be viewed as an intermedi-



reports are submitted to OMB to review the agencies' progress in achieving the previous year's performance goals, apply that experience in evaluating the performance plan for the current year, explain any failures to meet goals, and summarize program evaluations completed during the preceding year.<sup>75</sup>

During over fifteen years of experience with the GPRA's processes, several reports by OMB (under both Republican President George W. Bush and Democratic President Barack H. Obama),<sup>76</sup> GAO,<sup>77</sup> and academics<sup>78</sup> found that the federal agencies

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ate outcome to measure progress toward meeting or contributing to end outcomes of improved ambient air quality and reduced mortality from air pollution. Given that the end outcomes of an assistance agreement may not occur until after the assistance agreement funding period, intermediate outcomes realized during the funding period are an important way to measure progress in achieving end outcomes.

*The Relationship Between Outputs and Outcomes* is illustrated by the following example: Assistance agreement for an outreach program to building code officials on radon-resistant building techniques: Outputs would include development of a model building code manual and training sessions on the benefits of radon-resistant construction. Intermediate outcomes would be the enactment of local building codes and the actual construction of radon-resistant houses. This would contribute to an end outcome of improved indoor air quality.

*Performance Measure*: A metric used to gauge program or project performance. When grant recipients and EPA project officers negotiate target values for outputs and outcomes, they become performance measures.

*Linking Assistance Agreements to Environmental Results*, ENVTL. PROT. AGENCY, <http://www.epa.gov/ogcl/grants/assistance.htm> (last visited Oct. 1, 2014).

75. GPRA, § 4 (codified at 31 U.S.C. § 1116).

76. *The President's Management Agenda*, OFFICE OF MGMT. AND BUDGET 27 (2001) ("After eight years of experience, progress toward the use of performance information for program management has been discouraging . . . Performance measures are insufficiently used to monitor and reward staff, or to hold program managers accountable."); *The President's Budget for Fiscal Year 2012*, OFFICE OF MGMT. AND BUDGET 73 (2011) ("The ultimate test of an effective performance management system is whether it is used, not the number of goals and measures produced. Federal performance management efforts have not fared well on this test.").

77. *Government Performance: Lessons Learned for the Next Administration on Using Performance Information to Improve Results* on GAO-08-1026T, *before Subcomm. on Fed. Fin. Mgmt., Gov't Info., Fed. Serv., Int'l Sec., Comm. on Homeland Sec. & Gov't Affairs* (2008) (statement of Bernice Steinhardt, Director of Strategic Issues). Director Steinhardt stated :

[O]ur surveys show that, while significantly more federal managers' have performance measures for their programs and some agencies have shown greater use of information, overall the use of performance information in management decision making has not changed over the last 10 years. To remedy this situation, the next administration should focus its efforts on ensuring that performance information is both useful and used.

*Id.*

78. D. Moynihan & S. Lavertu, *Does Involvement in Performance Reforms Encourage Performance Information Use? Evaluating GPRA and PART*, 72 PUB. ADM. REV. 592 (2012).

made little use of performance information for program management. The goals and measures produced by the agencies' staff to comply with the GPRA were not being used to hold program managers accountable, and agency leaders were not committed to the performance management system.<sup>79</sup>

Legislative reforms enacted in 2010 added to the frequency, scope, and processes for reviews and reports with the goal of increasing the agencies' use of performance information to improve their management and results.<sup>80</sup> The amendments retained the three types of reports mandated by the GPRA, with changes to their names, timing, coverage and other details.<sup>81</sup> Among the new processes for program evaluation were agency reports on priority goals (identified every two years, with quarterly progress reviews and annual evaluations of unmet goals), and OMB reports encompassing agencies' programs across the Executive Branch (addressing priority goals for outcomes and management improvements, with annual and quarterly reviews).<sup>82</sup> Additionally, to improve the management and performance of the agencies, the GPRMA established in each agency a Chief Operating Officer and Performance Improvement Officer, as well as a cross-agency Performance Improvement Council chaired by OMB.<sup>83</sup> The legislation requires quarterly progress reviews by the agencies addressing their priority and other goals, led by the Chief Operating Officer.<sup>84</sup>

The GPRA and GPRMA have been implemented across agencies through guidance and other actions by OMB.<sup>85</sup> OMB emphasized the importance of engaging agency leaders in performance management systems: "Leaders have established clear roles and responsibilities, set ambitious priority goals, personally conducted regular reviews of progress, and taken action based on evidence and on opportunities to coordinate across silos."<sup>86</sup> Put differently,

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79. *See id.* at 592-602.

80. GPRA Modernization Act of 2010, S. REP. NO. 111-372, at 11 (2010).

81. *Id.* at 19.

82. *See* CRS GPRA CHANGES, *supra* note 68, at 7-11. Importantly, the GPRMA aligned the timing of several reports to Congress with the submission of the President's budget proposal. *Id.* at 15.

83. *Id.* at 11-13.

84. *Id.*

85. *See generally* 31 U.S.C. § 1116.

86. U.S. OFF. OF MGMT. & BUDGET CIRCULAR NO. A-11, Strategic Plans, Annual Performance Plans, Performance Reviews, and Annual Program Performance Reports Pt. 6, 1 (July 2013); U.S. OFF. OF MGMT. & BUDGET CIRCULAR NO. A-11, Preparation, Submission, and Execution of the Budget (July 2013); *see also* J. Zients, *Roadmap for a More Efficient and Accountable Federal Government: Implementing the GPRA Modernization Act* (2011), available at <http://www.whitehouse.gov/sites/>

program evaluation is a key function for agency leaders and central to success, not merely “check-the-box” paperwork executed by administrative staff. The OMB guidance highlights numerous roles for performance indicators, measurements and quantitative analyses, such as “conducting data-driven reviews,” “creating a results-oriented culture,” “setting ambitious, yet realistic targets,” and “adoption of evidence-based strategies.”<sup>87</sup> In particular: “Successful reviews include analyzing disaggregated data, learning from past experience, and deciding next steps to increase performance and productivity.”<sup>88</sup>

As for the GPRMA’s processes, in 2013 GAO found that agency leadership actively participated in the quarterly reviews; agencies were able to choose performance measures which aligned with their goals; agency leaders held officials accountable for identifying performance problems and opportunities for improvement; agencies generally generated and communicated performance data in a timely manner; and agency officials attributed improvements in performance and decision-making to the quarterly reviews.<sup>89</sup> In 2014, the White House claimed: “The agency reports show significant progress across the government in delivering results and positive impact for the American people.”<sup>90</sup>

#### *b. Inspectors General*

The Inspector General Act of 1978, as amended in 1988 and 2008,<sup>91</sup> created offices within agencies intended to “provide leadership and coordination and recommend policies for activities” in order to “promote economy, efficiency, and effectiveness” in the administration of, and “to prevent and detect fraud and abuse in”

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default/files/omb/memoranda/ (May 10, 2011/m11-16.pdf. (May 10, 2011); *Delivering on the Accountable Government Initiative and Implementing the GPRA Modernization Act of 2010*, U.S. OFF. OF MGMT. & BUDGET (Apr. 14, 2011).

87. See U.S. OFF. OF MGMT. & BUDGET CIRCULAR NO. A-11, *supra* note 86.

88. *Id.*

89. GOV’T ACCOUNTABILITY OFFICE, GAO-13-228, MANAGING FOR RESULTS: DATA-DRIVEN PERFORMANCE REVIEWS SHOW PROMISE BUT AGENCIES SHOULD EXPLORE HOW TO INVOLVE OTHER RELEVANT AGENCIES 4, 8, 16, 20, 32, 37, 38 (2013) (recommending that “agencies extend their quarterly performance reviews to include, as relevant, representatives from outside organizations that contribute to achieving their agency performance goals.”).

90. *Real Progress in Meeting Agency Performance Goals*, WHITE HOUSE BLOG, (Feb. 13, 2014) <http://www.whitehouse.gov/blog/2014/02/13/real-progress-meeting-agency-performance-goals>.

91. DEP’T. OF THE TREASURY, OFFICE OF THE INSPECTOR GEN., *Inspector General Deskbook*, Pub. L. No. 95-452, 92 Stat. 1101 (1978); Pub. L. No. 100-504, 102 Stat. 2515 (1988); Pub. L. No. 110-409, 122 Stat. 4302 (2008).

federal agencies and departments.<sup>92</sup> The act reflected public and Congressional concerns about the accountability of federal agencies in light of the complexity and expenses of their programs.<sup>93</sup> The principal responsibility of Inspectors General is to conduct audits and investigations relating to their agencies' programs and operations, and then report directly to Congress and the Attorney General.<sup>94</sup> The statute intended that the Inspectors General function as independent, objective organizations within the agencies.<sup>95</sup>

Although the Inspectors General have the duty to recommend policies to promote efficiency in the administration of programs, they cannot assume "program operating responsibilities."<sup>96</sup> Moreover, as independent, objective units, the Offices of Inspector General (OIG) are set apart from the leadership of agencies in setting strategic goals, designing programs, establishing performance metrics for programs, providing day-to-day program management, and rewarding excellence in program execution.<sup>97</sup>

The standards for the management, operation, and conduct of the OIGs address audits, investigations, inspections, and evaluations.<sup>98</sup> The principles emphasize the OIGs' integrity, objectivity, independence, professional judgment, and confidentiality.<sup>99</sup> Regarding data collection and analysis for evaluation of programs, the standards focus on accuracy and reliability of information in inspection work, as opposed to performance measurements for on-going program management and improvement.<sup>100</sup>

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92. Inspector General Act of 1978, 5 U.S.C. App. 3 § 2(2) (2012). *See* *NASA v. Fed. Labor Relations Auth.*, 527 U.S. 229, 240 (1999) (Office of Inspector General established to facilitate "objective inquiries into bureaucratic waste . . . and mismanagement."); *Truckers United for Safety v. Mead*, 251 F.3d 183, 186 (D.C. Cir. 2001) ("Congress structured the [Office of Inspector General] to promote independence and objectivity.").

93. *See* PAUL C. LIGHT, *MONITORING GOVERNMENT: INSPECTORS GENERAL AND THE SEARCH FOR ACCOUNTABILITY*, (BROOKINGS INST. PRESS, 1993); Margaret J. Gates & Marjorie Fine Knowles, *The Inspector General Act in the Federal Government: A New Approach to Accountability*, 36 ALA. L. REV. 473, 473 (1985).

94. 5 U.S.C. App. 3 §§ 3(a), 4(a).

95. *See Id.* § 2.

96. *Id.* §§ 4(a)(3).

97. COUNCIL OF THE INSPECTORS GEN. ON INTEGRITY AND EFFICIENCY, *QUALITY STANDARDS FOR FEDERAL OFFICES OF INSPECTOR GENERAL* 11, 31 (Aug. 2012).

98. *Id.* at 3 (citing Exec. Order No. 12805, 3 C.F.R. 299 (1993)).

99. *Id.* at 7-8.

100. COUNCIL OF THE INSPECTORS GEN. ON INTEGRITY AND EFFICIENCY, *QUALITY STANDARDS FOR INSPECTION AND EVALUATION* 11-12 (2012).

*c. GAO Annual Reviews for Duplicative and Wasteful Programs*

In 2010, Congress required GAO to conduct government-wide annual reviews to identify federal programs, agencies, offices, and initiatives having duplicative goals and activities. In the final section of a law, which increased the public debt limit, Congress provided for GAO investigations of programs and reports to Congress, including GAO's independent recommendations for consolidation and elimination of programs.<sup>101</sup> The annual reviews are intended to inform actions by Congress and the Executive Branch in funding and managing programs, including enhanced interagency coordination.

GAO's 2011, 2012, and 2013 reports identified in aggregate approximately 380 actions in 162 areas that the Executive Branch and Congress could take to reduce, eliminate, or better manage program fragmentation, overlap, or duplication, or achieve other potential financial benefits.<sup>102</sup> In monitoring progress by the Executive Branch and Congress in responding to these recommendations, GAO reported in 2014 that thirty-two percent of these 380 actions were addressed and forty-four percent were partially addressed; GAO estimated that changes in response to these recommendations resulted in over ten billion dollars in realized cost savings through March 2014.<sup>103</sup> The 2014 GAO report recommended a total of sixty-four actions across twenty-six areas, including nineteen actions to address an additional eleven new areas.<sup>104</sup>

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101. Public Debt Limit Increase, Pub. L. No. 111-139 (2010); GOV'T ACCOUNTABILITY OFFICE, OPPORTUNITIES TO REDUCE POTENTIAL DUPLICATION IN GOVERNMENT PROGRAMS, GAO-11-318SP, SAVE TAX DOLLARS, AND ENHANCE REVENUE 2 (2011) ("Overlap and fragmentation among government programs or activities can be harbingers of unnecessary duplication. Reducing or eliminating duplication, overlap or fragmentation could potentially save billions of tax dollars annually and help agencies provide more efficient and effective services."); HENRY B. HOGUE, CONG. RESEARCH SERV., R41841, EXECUTIVE BRANCH REORGANIZATION INITIATIVES DURING THE 112TH CONGRESS: A BRIEF OVERVIEW 16-17 (2011).

102. GOV'T ACCOUNTABILITY OFFICE, 2014 ANNUAL REPORT: ADDITIONAL OPPORTUNITIES TO REDUCE FRAGMENTATION, OVERLAP, AND DUPLICATION AND ACHIEVE OTHER BENEFITS 11 (Apr. 2014)[hereinafter GAO 2014 REPORT].

103. *Id.* at 11, 15.

104. *Id.* at 3 (providing new action areas in 2014).

2. *Examples of Evaluations for Federal Agency Programs Targeting Environmental Sustainability*

Federal environmental sustainability programs face uncertainties in technologies, costs, demand, user behaviors, conditions for installations and operations, and other factors.<sup>105</sup> These examples demonstrate the beneficial but distinct focuses of the program review processes pursuant to the GPRMA, Inspector General Act and GAO annual reviews for duplication.<sup>106</sup>

Regarding the GPRMA, the Department of Energy (DOE) released a strategic plan in May 2011, setting forth program goals and measures.<sup>107</sup> The DOE's annual performance report released in 2012, reflected that 165 of its 191 strategic plan targets were met through fiscal year 2011.<sup>108</sup> As an illustration of one DOE target reported as met, the key measure established for the goal of energy efficiency retrofits was number of homes weatherized; the fiscal year 2011 target was 666,438, and the result was 769,420.<sup>109</sup> The DOE also reported the estimated annual energy and cost savings per home, the GHG reduction, and any issues in meeting the next year's target.<sup>110</sup> On the other hand, DOE set several goals for wind power, including a fiscal year 2011 target of 5,369 new units of distributed wind turbines deployed.<sup>111</sup> The annual performance re-

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105. See W. Lavey, *Overcoming Conceptual and Practical Hurdles to Market-Based Discovery of Prices for Utility Procurements from Rooftop Solar Systems*, 25 TULANE ENVTL. L. J. 289, 309-313, 320 (2012).

106. See *supra* notes 67-100. These few examples, however, do not cover the full scope of program evaluations pursuant to these statutes.

107. DEP'T OF ENERGY, STRATEGIC PLAN (May 2011), available at [http://energy.gov/sites/prod/files/2011\\_DOE\\_Strategic\\_Plan\\_.pdf](http://energy.gov/sites/prod/files/2011_DOE_Strategic_Plan_.pdf); see also DEP'T OF ENERGY, STRATEGIC PLAN 2014-2018 (2014), available at [http://www.energy.gov/sites/prod/files/2014/04/f14/2014\\_dept\\_energy\\_strategic\\_plan.pdf](http://www.energy.gov/sites/prod/files/2014/04/f14/2014_dept_energy_strategic_plan.pdf).

108. DEP'T OF ENERGY, FISCAL YEAR 2011 ANNUAL PERFORMANCE REPORT 11 (2012), available at <http://energy.gov/sites/prod/files/FY11APR.pdf>.

109. *Id.* at 13-14. In its report DOE specifically noted: DOE has completed energy efficiency retrofits on 769,420 homes, resulting in an estimated annual energy savings of \$437 per home retrofitted and an increase in the comfort and safety of homes for many low-income American families. These retrofits will save over 21 trillion Btu of energy and reduce greenhouse gases by approximately 2 million metric tons of carbon dioxide equivalent annually. Through FY 2011, DOE has exceeded the retrofit production target by 10%. At the current production pace and funding, DOE and HUD will reach the goal of 1.1 million retrofits by the end of FY 2013. Minor service interruptions within the network of weatherization providers have occurred due to recent reductions in annual funding; however, all milestones and targets are currently on track.

*Id.*

110. *Id.* at 14.

111. *Id.* at 53.

port stated that this goal was missed by about 2,200 units, and provided explanations of causes along with a change in the next year's target.<sup>112</sup> The DOE's commentaries illustrate how the GPRMA processes integrate program monitoring and evaluation with improvements in program management.

To illustrate the work of the DOE's Inspector General, that office released an audit report in 2013 on the DOE's efforts to implement changes in the agency's vehicles to comply with directives in an Executive Order; those requirements included using alternative (non-petroleum) fuel vehicles, optimizing the number of vehicles, and reducing petroleum consumption by at least two percent annually.<sup>113</sup> Of the three sites audited, the Inspector General found that two sites failed to manage their fleet vehicles programs effectively.<sup>114</sup> The audit report noted that the DOE's policies and procedures did not locate alternative-fuel vehicles near alternative fueling stations, and did not optimize fleet inventory regarding the type and number of vehicles.<sup>115</sup> The Inspector General opined that, after management in the relevant DOE offices reviewed a draft of the audit, "management's planned corrective actions [were] fully responsive to [DOE's] findings and recommendations."<sup>116</sup>

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112. See FISCAL YEAR 2011 ANNUAL PERFORMANCE REPORT, *supra* note 108, at 53. The DOE report explained:

The goal is missed by just over 2,200 units and was impacted by the economic recession and the expiration of state policies that had strongly encouraged small wind in prior years (NJ & CA). U.S. market barriers such as zoning/permitting, increasing demand charges by utilities, hesitancy of public power entities to deviate for [generation and transmission] guidance, and stable policy continue to slow potential growth. Average size is increasing to 8.4 kW (2010) vs. 4.4 kW (2007), which is another explanation for the reduced overall number of units deployed (more power from fewer units). This goal will be retired for FY 2013, since number of units is not best indicator of total impact of distributed wind deployment.

*Id.*

113. OFFICE OF INSPECTOR GEN., OFFICE OF AUDITS AND INSPECTIONS, AUDIT REPORT: THE DEPARTMENT'S FLEET VEHICLE SUSTAINABILITY INITIATIVES AT SELECTED LOCATIONS 1, 4 (2013) (citing Exec. Order No. 13514, 3 C.F.R. 248 (Oct. 5, 2009)), available at <http://energy.gov/sites/prod/files/2013/10/f4/IG-0896.pdf>.

114. *Id.* at 1. At the two sites, about 854 flex-fuel vehicles (acquired by paying a premium of about \$700,000 over petroleum-fueled vehicles) were routinely fueled with regular gasoline rather than E-85 or other alternative fuels; and about twenty-five percent of their vehicles were retained despite not meeting minimum utilization standards. *Id.* at 2.

115. *Id.* at 2.

116. *Id.* For an example of the work of EPA's Inspector General in reviewing a program intended to increase freight transport fuel efficiency and decrease harmful air emissions, see EPA SMARTWAY REPORT, *supra* note 67, at 3 ("We conducted a design evaluation of the SmartWay program to determine whether controls were in place to ensure the overall validity of claimed SmartWay Transport Partnership results.").

Finally, GAO's 2014 report on duplicative and wasteful spending programs provided a scorecard on progress in addressing areas identified in its previous reports.<sup>117</sup> One energy area, for example, was identified in the 2013 GAO report and shown as addressed by the next year: federal support for renewable energy sources was fragmented across twenty-three agencies and hundreds of initiatives, making it difficult to estimate total federal support and resulting in duplicative, possibly unneeded support for some wind projects.<sup>118</sup> In contrast, another area identified in the 2011 GAO report, "resolving conflicting requirements could more effectively achieve federal fleet energy goals," was shown as unaddressed as of 2014.<sup>119</sup>

## B. Grant Management

The federal government's attempts to control and evaluate agencies' grant-making programs are particularly relevant in searching for guidance for campus sustainability funds. The statutes aimed at program evaluation described in Section III.A include grant-making programs.<sup>120</sup> The federal government has developed additional focus on and processes for monitoring and evaluating grants described in this section.

### 1. General Guidance on Federal Grant Management

In 2005, a group of nineteen federal, state, and local audit organizations tasked by the U.S. Comptroller General's Domestic Working Group released a report offering suggestions for improving grant accountability.<sup>121</sup> Previously, OMB found that forty-five

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117. See GAO 2014 REPORT, *supra* note 102, at 193.

Federal support for wind and solar energy, biofuels, and other renewable energy sources, which has been estimated at several billion dollars per year, is fragmented because 23 agencies implemented hundreds of renewable energy initiatives in fiscal year 2010—the latest year for which GAO developed these original data. Further, the DOE and USDA could take additional actions—to the extent possible within their statutory authority—to help ensure effective use of financial support from several wind initiatives, which GAO found provided duplicative support that may not have been needed in all cases for projects to be built.

*Id.*

118. See *id.*

119. *Id.*

120. For descriptions of the GPRA, GPRMA and Inspector General Act, see *supra* notes 68-76, 80-87 and accompanying text.

121. See generally, DOMESTIC WORKING GROUP, GRANT ACCOUNTABILITY PROJECT, GUIDE TO OPPORTUNITIES FOR IMPROVING GRANT ACCOUNTABILITY (2005), available at <http://www.ignet.gov/randp/grantguide.pdf><http://www.ignet.gov/randp/grantguide.pdf>.



percent of the 159 grant programs assessed were rated “Results Not Demonstrated,” meaning that the program lacked a “good performance measure or data for that measure.”<sup>122</sup> The group noted the “sometimes difficult process” encountered by federal agencies in establishing outcome-focused measures when attempting to comply with the GPRA.<sup>123</sup>

While attempting to improve grant-making, the Grant Accountability Project observed that the grant process is cyclical and emphasized the need for performance metrics, monitoring, assessments, and adjustments to programs based on actual experience.<sup>124</sup> This group recommended, *inter alia*: (a) prior to awarding grants, policies and procedures for internal control systems should be prepared, including grant management training for staff and grantees; (b) performance measures should link activities to program goals and should be developed by joint work of grantors and grantees; (c) the pre-award process should include assessing applicant capability to account for funds, preparing work plans to provide the framework for grant accountability, and reflecting grant accountability responsibilities and actions in grant award documents; (d) a grantor should manage a grantee’s performance by monitoring financial status of grants as well as performance, and by using audits; and (e) the grant performance should be assessed to provide evidence of program success and identify ways to improve program performance.<sup>125</sup> More recently, the GAO in 2011 again emphasized internal controls over grant processes, but found weaknesses in controls at agencies as well as oversight issues.<sup>126</sup>

## 2. *Implementing Accountability in EPA Grants Process*

The U.S. Environmental Protection Agency’s (EPA) plan for grants management illustrates the processes for monitoring and evaluation. The EPA awards about half of its annual budget in

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122. *Id.* at 3.

123. *Id.* at 12.

124. *Id.* at 3.

Before the grant process even begins, goals and measures must be established to provide a guide. Pre-award processes should ensure the appropriate awarding of grants. Once grants are awarded, performance needs to be monitored. Following grant completion, the goals and measures established at the beginning of the process need to be evaluated against actual results and adjustments made as needed for future grants efforts.

*Id.*

125. *Id.* at ii.

126. GOV’T ACCOUNTABILITY OFFICE, FEDERAL GRANTS: IMPROVEMENTS NEEDED IN OVERSIGHT AND ACCOUNTABILITY PROCESSES 1 (June 2011), available at <http://www.gao.gov/new.items/d11773t.pdf>.

grants to state, local, tribal, educational, and nonprofit entities.<sup>127</sup> The primary goal of the EPA's grant management process is to measure program performance and evaluate whether recipients are supporting the achievement of environmental results furthering the agency's mission.<sup>128</sup>

The EPA has taken several steps to integrate outcome-oriented controls into its grant processes. Through the agency's Environmental Results Policy, EPA project officers must: "[l]ink proposed results in assistance agreements to the [EPA's] Strategic Plan;" "[e]nsure that expected outputs and outcomes are appropriately addressed in announcements of assistance agreement[s], . . . work plans, and performance reports;" and "[c]onsider how the . . . assistance agreement projects contribute to the [EPA's] programmatic goals and objectives."<sup>129</sup>

To implement this policy, the EPA announcements for funding applications must contain sections addressing several aspects of grant management: "discussion of environmental outputs and outcomes" expected to be achieved by the grantee; request for applicants' "plan for tracking and measuring their progress on the expected outputs and outcomes;" description of "applicants' past performance in reporting on outputs and outcomes;" and ranking criteria for evaluating such plans for tracking and measuring as well as such past performance.<sup>130</sup>

Finally, recipients of EPA assistance agree to include in performance reports information on three issues: "[c]omparison of actual versus anticipated outputs and outcomes specified in [the] assistance agreement work plan; reason for slippage if established outputs/outcomes were not met;" and "[o]ther pertinent information, such as cost overruns."<sup>131</sup> In addition to this information in

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127. EVNTL. PROT. AGENCY, GRANTS MANAGEMENT PLAN: 2009-2013 ii (Oct. 2008), *available at* <http://www.epa.gov/ogd/EO/finalreport.pdf>.

128. *See id.*

129. *See EPA Linking Assistance, supra* note 74; *see also* EVNTL. PROT. AGENCY, POLICY FOR COMPETITION OF ASSISTANCE AGREEMENTS 9-12 (2014), *available at* [http://www.epa.gov/ogd/competition/5700\\_5\\_a\\_1\\_final\\_order\\_2\\_11\\_14.pdf](http://www.epa.gov/ogd/competition/5700_5_a_1_final_order_2_11_14.pdf); EVNTL. PROT. AGENCY, OFFICE OF INSPECTOR GEN., EPA'S EFFORTS TO DEMONSTRATE GRANT RESULTS MIRROR NONGOVERNMENTAL ORGANIZATIONS' PRACTICES (2005), *available at* <http://www.epa.gov/oig/reports/2005/20050602-2005-P-00016.pdf>; U.S. SENATE ENV'T AND PUBLIC WORKS COMM., GRANTS MANAGEMENT AT THE ENVIRONMENTAL PROTECTION AGENCY: A NEW CULTURE REQUIRED TO CURE A HISTORY OF PROBLEMS (2004), *available at* <http://www.epw.senate.gov/repwhitepapers/Grants.pdf>.

130. *See id.*

131. EVNTL. PROT. AGENCY, ENVIRONMENTAL RESULTS UNDER EPA ASSISTANCE AGREEMENTS 6 (2013), *available at* [http://www.epa.gov/ogd/grants/award/5700\\_7\\_a\\_1.pdf](http://www.epa.gov/ogd/grants/award/5700_7_a_1.pdf).

performance reports, recipients must notify the EPA of “problems, delays, or adverse conditions which may materially impair [the] ability to meet the outputs or outcomes specified in the assistance agreement work plan.”<sup>132</sup>

### 3. *Examples of Reviews of Internal Controls for Environmental Sustainability Grants*

In November 2013, the DOE’s Inspector General released a report on its audit of that agency’s Energy Efficiency and Conservation Block Grant (EECBG) Program.<sup>133</sup> The audit found that of the \$9 million allocated to the District of Columbia, grants made by the District Department of the Environment (DDOE) included \$630,000 to two community-based organizations that “lacked adequate experience in the area of energy efficiency retrofits,” and \$160,000 to three community-based organizations “without assigning corresponding work.”<sup>134</sup> Moreover, the DDOE did not adequately monitor, correct, or report poor performance by one recipient, and failed to maintain sufficient supporting documentation in project files.<sup>135</sup> The DOE Inspector General concluded that the DDOE grant program operated with ineffective controls in the selection and evaluation process as well as in monitoring/oversight.<sup>136</sup>

A further illustration of applying monitoring/evaluation to grant management appears in a 2014 EPA Inspector General review of a grant to the California Air Resources Board (CARB) to repower locomotives with lower-emission engines.<sup>137</sup> Covering work in 2009-

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132. *Id.* (citing 40 C.F.R. §§ 30.51(f), 31.40(d)).

133. DEP’T OF ENERGY, OFFICE OF INSPECTOR GEN., OFFICE OF AUDITS AND INSPECTIONS, AUDIT REPORT: THE DEPARTMENT OF ENERGY’S AMERICAN RECOVERY AND REINVESTMENT ACT ENERGY EFFICIENCY AND CONSERVATION BLOCK GRANT PROGRAM – DISTRICT OF COLUMBIA 1 (Nov. 2013) [hereinafter DOE 2013 AUDIT REPORT], available at <http://energy.gov/sites/prod/files/2013/12/f5/OAS-RA-14-02.pdf>. Similarly, the DOE Inspector General conducted audits on several state recipients of funds for weatherization assistance. See e.g., DEP’T OF ENERGY, OFFICE OF INSPECTOR GEN., OFFICE OF AUDITS AND INSPECTIONS, AUDIT REPORT: THE DEPARTMENT OF ENERGY’S WEATHERIZATION ASSISTANCE PROGRAM FUNDED UNDER THE AMERICAN RECOVERY AND REINVESTMENT ACT FOR THE STATE OF MICHIGAN (2013), available at <http://energy.gov/sites/prod/files/2013/06/f1/OAS-RA-13-25.pdf>.

134. *See id.* at 2.

135. *Id.*

136. *Id.* at 3. The DOE Inspector General stated that the shortcomings of the DDOE’s internal controls increased risk of fraud, waste, and abuse of DOE and other federal programs managed by the District of Columbia. *Id.*

137. ENVTL. PROT. AGENCY, OFFICE OF INSPECTOR GEN., UNLESS CALIFORNIA AIR RESOURCES BOARD FULLY COMPLIES WITH LAWS AND REGULATIONS, EMISSION REDUCTIONS AND HUMAN HEALTH BENEFITS ARE UNKNOWN 1-3 (2014) [hereinafter EPA

10, the grant raised at least three types of issues as to expected versus achieved outputs and outcomes.<sup>138</sup> First, performance exceeded some aspects of the work plan in the funding agreement: the railroad repowered more locomotives, did so in less time, and used less federal funding, largely through cost reductions in manufacturing.<sup>139</sup> The grantee, however, initially deviated from, and then agreed to comply with, another provision of the work plan.<sup>140</sup> A third issue shows the importance of clarifying the performance metrics and data collection through joint efforts by the granting agency and applicants prior to award of the grant.<sup>141</sup> In this case, the funding agreement obligated the recipient to include “actual” emissions benefit calculations in its final project report, but the recipient’s report relied on estimates of fuel usage and emission factors; it claimed that actual measurements were infeasible.<sup>142</sup>

### C. Retrospective Review of Regulatory Rules and Programs

Finally, retrospective review of regulatory rules and programs is another form of performance monitoring and evaluation conducted by many federal agencies. As background, prospective (prior to adoption) cost-benefit analyses of regulations has been a focus for several decades through multiple Executive Orders<sup>143</sup> and

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CARB REPORT], available at <http://www.epa.gov/oig/reports/2014/20140306-14-R-0130.pdf>.

138. *Id.* at 6-17.

139. *Id.* at 5.

140. *Id.* at 9-11. CARB allowed the railroad to use the old engines outside of California; years later, after the EPA Inspector General’s review, CARB and the railroad committed to scrapping or remanufacturing the old engines, as specified in the funding agreement, so that the expected emission reduction would be achieved nationally. *Id.*

141. *See id.* at 14-17.

142. EPA CARB REPORT, *supra* note 137, at 15. While the EPA and CARB accepted as adequate a calculation based on estimated annual fuel usage by the locomotives and estimated emission factors (claiming that the estimates were industry standard practice and that actual measurements were infeasible), the EPA Inspector General pointed to the agreed term in the cooperative agreement and opined that the range of estimates is so wide that “EPA and the public do not have reasonable assurance that the project will achieve projected emissions reductions or expected environmental results and human-health benefits.” *Id.* at 16.

143. *See e.g.*, Exec. Order No. 12,291, 3 C.F.R. 127 (1981) (“(a) Administrative decisions shall be based on adequate information concerning the need for and consequences of proposed government action; (b) Regulatory action shall not be undertaken unless the potential benefits to society for the regulation outweigh the potential costs to society.”); Exec. Order No. 12,866, 3 C.F.R. 638 (1994) (“Each agency shall assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs.”); Exec. Order No. 13,563 §1(b), 3 C.F.R. 215 (2012),

OMB guidance.<sup>144</sup> Participants in regulatory proceedings often battle over projections and analyses of proposed regulations' costs, benefits, environmental impacts, public health effects, and other regulatory impacts, before the regulatory agencies and in the courts.<sup>145</sup> Typically, substantial uncertainties surround the projections forming the evidentiary basis for administrative or court decisions.

There is generally less awareness of retrospective reviews of the impacts and effectiveness of federal regulatory rules and programs, which are well established in legislation,<sup>146</sup> Executive Orders,<sup>147</sup> and OMB reports.<sup>148</sup> Regulatory agencies must conduct periodic reviews of their regulations, with an emphasis on collecting and an-

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reprinted in 5 U.S.C. § 601 app. at 101-02, (2006 & Supp. V 2011) (“each agency must . . . propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify”).

144. U.S. OFF. OF MGMT. & BUDGET, CIRCULAR NO. A-94 Revised – Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs (1992); U.S. OFF. OF MGMT. & BUDGET, CIRCULAR NO. A-4 Regulatory Analysis (2003).

145. See e.g., *Entergy Corp. v. Riverkeeper, Inc.*, 556 U.S. 208, 223-24 (2009) (noting that EPA may, but is not required to, employ cost-benefit analysis in determining best technology available for minimizing adverse environmental impact); Sanja Muranovic, *Cost-Benefit Analysis in Environmental Regulation: The Case of Impingement and Entrainment and What to Take Away from Entergy Corp. v. Riverkeeper, Inc.*, 41 TEX. ENVTL. L.J. 309 (2011); *NRDC v. EPA*, 937 F.2d 641, 646-48 (D.C. Cir. 1991) (bringing challenge to cost-benefit analysis in the EPA's Regulatory Impact Analysis for a rule); Resources for the Future, *Reforming Regulatory Impact Analysis* (Winston Harrington et al. eds., 2009), available at [http://www.rff.org/RFF/Documents/RFF.RIA.V4.low\\_res.pdf](http://www.rff.org/RFF/Documents/RFF.RIA.V4.low_res.pdf).

146. Regulatory Right-to-Know Act of 1999, H.R. 1074, 106th Cong. (1999).

147. Exec. Order No. 12,866 §1(b)(2), 3 C.F.R. 638 (1994) (“Each agency shall examine whether existing regulations (or other law) have created, or contributed to, that problem that a new regulation is intended to correct and whether those regulations (or other law) should be modified to achieve the intended goal of regulation more effectively.”); Exec. Order No. 13,563 §1(a), 3 C.F.R. 215 (2012) (“Our regulatory system . . . must measure, and seek to improve, the actual results of regulatory requirements.”); Exec. Order No. 13,563 §6 (“To facilitate the periodic review of existing significant regulations, agencies shall consider how best to promote retrospective analysis of rules that may be outmoded, ineffective, insufficient, or excessively burdensome, and to modify, streamline, expand, or repeal them in accordance with what has been learned.”); Exec. Order No. 13,610 §11, 3 C.F.R. 258 (2012).

In response to Executive Order 13563, agencies have developed and made available for public comment retrospective review plans that identify over five hundred initiatives. A small fraction of those initiatives, already finalized or formally proposed to the public, are anticipated to eliminate billions of dollars in regulatory costs and tens of millions of hours in annual paperwork burdens.

*Id.*; Exec. Order No. 13,579 §2(a), 3 C.F.R. 256 (2011).

148. OFFICE OF MGMT. & BUDGET, 2014 DRAFT REPORT TO CONGRESS ON THE BENEFITS AND COSTS OF FEDERAL REGULATIONS AND UNFUNDED MANDATES ON STATE, LOCAL, AND TRIBAL ENTITIES (2014), available at <http://www.whitehouse.gov/sites/>

alyzing empirical evidence, engaging the public in identifying regulations for review, reporting on the status of reviews to the public twice per year, and reducing burdens on industries and the public. OMB recently observed that retrospective analysis “can be important as a corrective mechanism” for prospective analyses’ overestimates or underestimates of costs and benefits; retrospective analysis “can and should inform prospective analysis”; and there is increasing interest in retrospective analysis inside and outside of government.<sup>149</sup>

In addition to agency improvements to prospective analysis, retrospective analysis should be designed into the implementation and development of regulations. Regarding data collection and analysis, OMB concluded: “[R]ules should be written and designed, in advance, so as to facilitate retrospective analysis of their effects, including consideration of the data that will be needed for future evaluation of the rule’s ex post costs and benefits.”<sup>150</sup> Moreover, retrospective analysis should play a key role in an iterative approach to forming and reforming regulations (*i.e.*, learning from experience).<sup>151</sup>

The DOE’s actions illustrate retrospective reviews of environmental sustainability rules and programs. In 2011 in response to Executive Order 13,563, DOE issued a Request for Information seeking public input on which regulations it should review and what alternatives should be considered. The agency then adopted a plan for retrospective analysis and pointed to several changes in its regulations, including adjustments based on public comments.<sup>152</sup> By way of example, suggestions in public comments led DOE to revise its test procedure for fluorescent lamp ballasts, thereby reducing laboratory testing costs by fifty percent, and to adopt an extension in enforcing its water conservation standards for

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default/files/omb/inforeg/2014\_cb/draft\_2014\_cost\_benefit\_report-updated.pdf.

149. *Id.* at 3, 7.

150. *Id.* at 7 (emphasis omitted).

151. *Id.* at 53. “After retrospective analysis has been undertaken, agencies will be in a position to streamline, modify, expand, or eliminate rules that do not make sense in the current form or under existing circumstances.” *Id.*

152. DEP’T OF ENERGY, FINAL PLAN FOR RETROSPECTIVE ANALYSIS OF EXISTING RULES (2011), available at <http://www.whitehouse.gov/sites/default/files/other/2011-regulatory-action-plans/departmentofenergyregulatoryreform-planaugust2011.pdf>.

showerheads because of the high costs of the industry's inventory of non-compliant products.<sup>153</sup>

#### IV. GUIDANCE FROM THE WORLD BANK MONITORING AND EVALUATION OF PROJECTS

##### A. Focus, Organization, and Processes for Evaluations

With a focus on results-oriented assistance for development (reducing poverty and achieving sustainable growth), the World Bank made monitoring and evaluation integral to its governance and operations.<sup>154</sup> The World Bank relies on a combination of its project operations together with an internal group's reviews of programs and projects. As part of its project financing operations, World Bank staff and its borrowers select indicators, collect data and perform analyses during a project and in the closing report. The Independent Evaluation Group is an entity within the World Bank Group,<sup>155</sup> reports directly to the Board of Executive Directors, has unrestricted access to World Bank staff and records, and develops recommendations designed to improve the World Bank's programs and activities.<sup>156</sup>

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153. *Id.* at 2, 5-6; see also DEP'T OF ENERGY, DOE RETROSPECTIVE REVIEW PLAN AND BURDEN REDUCTION REPORT: JANUARY 2014 (Jan. 2014), available at <http://energy.gov/sites/prod/files/2014/03/f9/DOE%20Retrospective%20Review%20Plan%20and%20Burden%20Reduction%20Report%20January%202014%20FINAL.pdf>.

154. World Bank, OP13.60 – Monitoring and Evaluation §2 (2007) [hereinafter *World Bank OP13.60*]; CHERL CASHIN, WORLD BANK INDEP. EVALUATION GROUP, COMPARISON OF THE MONITORING AND EVALUATION SYSTEMS OF THE WORLD BANK AND THE GLOBAL FUND 52 (2012) [hereinafter IEG COMPARISON], available at [https://ieg.worldbankgroup.org/Data/reports/gfr\\_wp\\_april2012.pdf](https://ieg.worldbankgroup.org/Data/reports/gfr_wp_april2012.pdf). “Monitoring and evaluation provides information to verify progress toward and achievement of results, supports learning from experience, and promotes accountability for results.” *Id.*; see also WORLD BANK INDEP. EVALUATION GROUP, COST-BENEFIT ANALYSIS IN WORLD BANK PROJECTS ix (2010) [hereinafter IEG COST-BENEFIT], available at <https://openknowledge.worldbank.org/bitstream/handle/10986/2561/624700PUBCost00Box0361484B0PUBLIC0.pdf?sequence=1>.

Cost-benefit analysis used to be one of the World Bank's signature issues. It helped establish the World Bank's reputation as a knowledge bank and served to demonstrate its commitment to measuring results and ensuring accountability to taxpayers. Cost-benefit analysis was the Bank's answer to the results agenda long before that term became popular. IEG COST-BENEFIT, *supra*, at ix.

155. The World Bank Group includes the International Bank for Reconstruction and Development, the International Development Association, the International Finance Corporation, and the Multilateral Investment Guarantee Agency. See WORLD BANK INDEP. EVALUATION GROUP, IMPROVING DEVELOPMENT RESULTS THROUGH EXCELLENCE IN EVALUATION, available at [https://ieg.worldbankgroup.org/Data/ieg\\_brochure.pdf](https://ieg.worldbankgroup.org/Data/ieg_brochure.pdf).

156. *World Bank OP13.60*, *supra* note 154, at §6. The Independent Evaluation Group is directly responsible for:

The World Bank applies multiple monitoring and evaluation processes in striving for projects and programs that effectively serve its objectives. The goal of the monitoring and evaluation is “to create a traceable pathway from a project’s intent and objectives to inputs and activities, to performance against indicators, and ultimately to conclusions about effectiveness—both by the project team and by independent evaluators.”<sup>157</sup> The World Bank outlined the steps in its approach:

Clearly articulated statement of objectives, reflected in the design documents and lending agreements; Results framework with output and outcome indicators capable of measuring the results chain leading to achievement of the objectives, specified during project design; Regular supervision and supervision reports; Self-evaluation by the managing units; Implementation Completion and Results Reports (ICR) completed within six months of project closing; Independent validation of the ICRs by the Independent Evaluation Group (ICR Reviews) and independent field evaluations of about one in five projects; Project Performance Assessment Reports (PPARs); Project evaluations also feed into higher level evaluations, including country-level and sector-level evaluations, as well as meta-synthesis evaluations.<sup>158</sup>

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(a) assessing whether the Bank’s programs and activities are producing the expected results;

(b) incorporating evaluation assessments and findings into recommendations designed to help improve the development effectiveness of the Bank’s programs and activities, and their responsiveness to countries’ needs and concerns;

(c) appraising the Bank’s operations self-evaluation and development risk management system;

(d) reporting periodically to the Executive Directors on actions taken by the Bank in response to evaluation findings, and on the measures being taken to improve the overall operations evaluation system including dissemination and outreach activities; and

(e) encouraging and assisting developing member countries to build effective monitoring and evaluation associations, capacities and systems.

*Id.* See also WORLD BANK INDEPT. EVALUATION GROUP, INDEPENDENT EVALUATION GROUP ANNUAL REPORT 2013 (2013), available at [https://ieg.worldbankgroup.org/Data/IEG\\_annual\\_report\\_2013.pdf](https://ieg.worldbankgroup.org/Data/IEG_annual_report_2013.pdf).

<sup>157</sup> IEG COMPARISON, *supra* note 154, at v.

This includes an assessment of the Bank’s own performance and that of the borrower, in addition to the outcome of the project as a whole. A results framework, which describes the pathway from project activities to intermediate outcomes and ultimately to the project development objective, is a required annex in the Bank’s project appraisal documents.

*Id.*

<sup>158</sup> *Id.* at 3.



At the project design phase, the staff develops the framework for guiding project monitoring and evaluation, including a draft Project Appraisal Document. This document outlines the outcomes for each project component, describes how progress will be measured, and presents the results framework. The results framework should address data collection for the indicators, including where the data will come from, whether capacities need to be strengthened in order to collect and analyze the indicator data, what additional costs are required, and what mechanisms will allow managers and policy-makers to use the indicators to assess the project's effectiveness during implementation and after completion.<sup>159</sup> Also at the project design stage, Quality Enhancement Reviews assess the results framework and other aspects of the project as to whether the inputs can be expected to lead to the results and outcomes.<sup>160</sup>

Implementation status reports and mid-term reviews aim at monitoring performance against the project objectives. Every six months, project and technical staff submit reports that give ratings on progress toward the objective for the overall project and components thereof, and describe any implementation and disbursement bottlenecks. Mid-term reviews are process-oriented collaborations of World Bank staff with the borrowers, involving stakeholder meetings, field visits, and/or public presentation and discussion of the project status and results.<sup>161</sup>

Finally, rigorous, systematic guidelines and criteria for evaluations apply after completion. Evaluations by the project team (ICRs) must be submitted within six months after the closing date. Building on the monitoring data and performance reports, project performance is assessed against standard criteria, including outcome (relevance of objectives and design, achievement of objectives, and efficient use of resources ("value for money")); risk that development outcomes will not be maintained; quality of the World Bank's services in supporting implementation and supervision; quality of the borrower's performance in implementation and complying with agreements; and quality of the monitoring and evaluation design and implementation.<sup>162</sup> The Independent Evaluation Group reviews all ICRs and, for about twenty to twenty-five percent of closed projects, conducts an independent, in-depth review. Not-

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159. *Id.* at 4-6.

160. *Id.*

161. *Id.* at 6-8.

162. IEG COMPARISON, *supra* note 154, at 6-8.

ing that the ICRs frequently assigned low rating scores, the Independent Evaluation Group opined that the project teams “acknowledg[ed] the reality of the difficulties in achieving results in countries receiving Bank assistance” and “demonstrat[ed] a willingness to be self-critical in order to learn lessons for future global assistance investments and activities.”<sup>163</sup>

The World Bank focuses on cost-benefit analysis— comparing a project’s benefits against its costs, both expressed as present (time discounted) values— in project selection, design, monitoring and evaluation.<sup>164</sup> Three aspects of the World Bank’s policy highlight the importance of developing and applying effective analyses. First, a funding decision should choose an investment that maximizes the net present value of benefits from the alternatives, and not invest if the net present value is negative. Second, cost-benefit analysis should be applied generally to World Bank financings. If a project is expected to generate benefits not measurable in monetary terms, then the analysis should clearly define and justify the project objectives, and show that the project would be the least-cost way to attain those objectives (cost-effectiveness analysis). Third, the cost-benefit analysis should reflect transparency and accuracy in the assumptions and estimates, and show a comparison against alternatives (including doing nothing) as well as an assessment of the sources, magnitude, and effects of risks.

Reflecting the World Bank’s results-oriented culture, the World Bank’s annual report goes beyond summarizing its projects and accounting for its expenditures by region, sector, and theme. The annual report also highlights performance indicators for its projects, aggregates the impacts of World Bank projects since 2002 on key measures of development, and tracks the status of each region in terms of achieving the Millennium Development Goals. The report demonstrates the World Bank’s commitment to defining and pursuing measurable goals as well as monitoring the impacts of its projects.<sup>165</sup>

#### B. Some Shortcomings in the World Bank’s Processes

While the World Bank has adopted desirable standards and processes for project evaluation, the Independent Evaluation Group has identified several shortcomings in the implementation

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163. *Id.* at 9-11.

164. IEG COST-BENEFIT, *supra* note 154, at 55-56.

165. INDEPENDENT EVALUATION GROUP ANNUAL REPORT 2013, *supra* note 156, at 54-59.

of monitoring and evaluation. According to a 2010 study, a high percentage of World Bank projects ignore the institution's standards and fail to apply cost-benefit analysis at the funding stage and in the completion reports. For example, in 2008, only five of thirteen water projects reported economic rates of return (ERR) at the start and end; seven of fourteen energy and mining projects reported ERR at the start and end; and none of the eleven environmental projects reported ERR at the start or end.<sup>166</sup> In addition to the projects aimed at developing policy operations (which rarely apply cost-benefit analyses), a majority of the investment project teams asserted that the benefits were not quantifiable or that the relevant data was not collected and analyzed.<sup>167</sup>

While the Independent Evaluation Group expressed some sympathy with the claimed difficulties in applying "full-fledged" cost-benefit analysis to certain types of projects, the report pointed to risks from widespread abuses in using "unquantifiable benefits" as a reason for providing no cost-benefit or cost-effectiveness analysis:

[O]ne of the main benefits of cost-benefit analysis – namely, requiring people to articulate the benefits they expect and to compare these benefits with costs – [is] achieved within the first days of work. The benefits of performing a cost-benefits analysis, in terms of avoiding mistakes or choosing a better project, can reach 10 percent of project costs. . . . It is almost certainly valuable to do some cost-benefit analysis. Neither extreme – doing no cost-benefit analysis or spending months on a cost-benefit analysis – is likely to be the best answer.<sup>168</sup>

In particular, the Independent Evaluation Group pointed to the World Bank's failure to give significant weight to cost-benefit

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166. IEG COST-BENEFIT, *supra* note 154, at 13. One more water project reported its ERR at the end but not the start, and four more energy and mining projects reported ERR at the end but not the start. *Id.*

167. *Id.* at 12-18.

Of the ninety-three investment projects that closed in 2008 without reporting cost-benefit information (either at appraisal or at closing), sixty provided no explanation or asserted that efficiency considerations were not applicable. Eighteen projects cited inadequate data. Nineteen projects provided some relevant information, but the information tended to be in the form of positive anecdotes; no attempt was made to address potential selection bias. Twenty-four project documents invoked cost-effectiveness as the standard by which the projects were to be judged, but of these, none actually applied cost-effectiveness analysis, which entails a comparison between specific alternatives on the basis of cost.

*Id.*

168. *Id.* at 14.

analysis in project funding and design decisions, thereby reducing staff's incentives to expend the resources necessary for such analysis.<sup>169</sup> Most project leaders observed that decisions to pursue projects were typically made before the cost-benefit analysis was conducted. For project approval, having a cost-benefit analysis was usually treated as a "check-the-box" item, with the analysis and findings not meaningfully affecting project decisions. Additionally, senior staff rarely participated in conducting or even commenting on the cost-benefit analyses. Nevertheless, task team leaders strongly agreed that cost-benefit analysis should be used at closing to accurately estimate economic returns, and that lessons from such analyses should be used to amend future projects.

Other shortcomings found by the Independent Evaluation Group include upward bias in cost-benefit analyses because project managers controlled the staffing and conduct; inadequate clarity in defining performance indicators and data sources in the results framework; failure to implement status reports and mid-term reviews for day-to-day project management and policy dialogue; lack of evaluations of pilot projects; and high costs and difficulty of conducting impact evaluations.<sup>170</sup>

Stressing the need for solid evaluations at the start and end of projects, the Independent Evaluation Group made several recommendations to improve the analytic reasoning and evidentiary basis.<sup>171</sup> A few of these recommendations are highlighted. First, cost-benefit estimates should be developed and used before decisions are made to pursue projects. Next, enhance objectivity and reliability by (a) reducing the role of project managers in funding, conducting and directing the analysis of their own projects, and (b) using audited or verified records of cost-benefit results achieved from previous projects in assessing appraisals of new ones. Third, guidelines should be clear on which projects are expected to have cost-benefit analysis and when cost-effectiveness analysis suffices. Finally, instead of fragmented monitoring and evaluation tasks, the policy should strive to make appraisal activities a single, complete, integrated analytical exercise.

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169. *Id.* at 14, 32-33.

170. *Id.* at 46-49; IEG COMPARISON, *supra* note 154, at 6-12. Task team leaders observed that devoting time to cost-benefit analysis did not enhance career prospects. *Id.*

171. IEG COST-BENEFIT, *supra* note 154, at 46-49.

### C. Example of World Bank Monitoring and Evaluation in Environmental Sustainability Projects

In 2013, World Bank project staff submitted an Implementation Completion and Results Report (ICR) on a \$500 million project in Bangladesh involving solar home systems, compact fluorescent lamps (CFLs), mini-grids for energy supply, and grid connections for access to electricity.<sup>172</sup> The project's concept review was in 2001; the initial appraisal and approval occurred in 2002; additional financings were approved in 2009 and 2011; and the project closed in 2012.<sup>173</sup> As for reviews during the project implementation, a mid-term review occurred in 2006; appraisals for restructuring the project occurred in 2009, 2011, and 2012; and there were twenty-three Implementation Status and Results Reports.<sup>174</sup> Overall, the ICR rated the project as satisfactory for outcomes, World Bank performance, and borrower performance.<sup>175</sup>

The results framework in the project appraisal identified two sets of objectives: support Bangladesh's efforts to raise levels of social development and economic growth by increasing access to electricity in rural areas; and reduce atmospheric carbon emissions by overcoming market barriers for renewable energy development, including high implementation costs. The initial approval revised the first objective by adding the goal of promoting more efficiency in energy consumption.<sup>176</sup> In the project approval documents, the results framework also identified key indicators along with their baseline and target values.<sup>177</sup> During the project implementation,

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172. WORLD BANK, IMPLEMENTATION AND COMPLETION RESULTS REPORT FOR RENEWABLE ELECTRIFICATION AND RENEWABLE ENERGY DEVELOPMENT PROJECT IN BANGLADESH (2013) [hereinafter REPORT NO. ICR2609], *available at* [http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2013/07/15/000333037\\_20130715125106/Rendered/PDF/ICR26090ICR0Ba00Box377378B00PUBLIC0.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2013/07/15/000333037_20130715125106/Rendered/PDF/ICR26090ICR0Ba00Box377378B00PUBLIC0.pdf).

173. *Id.* at v, xiii.

174. *Id.* at v, xii-xiii.

175. *Id.* at vi.

176. *Id.* at viii.

177. REPORT NO. ICR2609, *supra* note 172, at ix - xi. The indicators included: expand electricity access to rural households by financing solar home systems (64,000 targeted); expand renewable energy options in rural areas through mini-grids (four targeted); more efficient energy consumption through installation of CFLs (ten million targeted); increase grid-based connections for electricity access (700,000 targeted); reduce carbon emissions (250,000 tons targeted); and reduce system loss of electricity distribution lines (forty percent loss baseline, and less than twenty percent targeted). *Id.* The project also identified key performance indicators associated with project development objectives in the areas of education, quality of life, women's empowerment, and regarding direct impact on income, rural productivity, and safe drinking water. *Id.* at 3-4.

targets were revised to reflect changes in market conditions, implementation experience, and additional financings. The ICR included a section describing lessons taken into consideration during preparation, pointing to evaluations of other World Bank renewable energy projects.<sup>178</sup>

The ICR clearly shows the original targets, formally revised targets, and actual values achieved at completion, together with comments on the performance by target.<sup>179</sup> For example, the target for solar home systems was revised upward in the two additional financings from 64,000 to 994,000; the project achieved 1,231,720 systems.<sup>180</sup> The use of monitoring and evaluation information aided the success of the solar home systems effort.<sup>181</sup> In contrast, the CFL effort suffered from quality problems (a thirty-four percent lamp failure rate); a second phase for the CFL effort, planned to raise the distribution from ten million to 27.5 million lamps, was abandoned.<sup>182</sup> The system loss of distribution lines dropped from a baseline of more than forty percent to 13.7 percent, exceeding the target of twenty percent. New grid connections fell short of the target by six percent. The project's energy achievements helped boost its contribution to avoided carbon emissions, going from an original target of 250,000 tons to achieving 14,000,000 tons. This

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178. *Id.* at 10.

179. *Id.* at viii-xi.

180. *Id.* at 13.

The implementation of the [solar home systems] program proved to be much more successful than originally anticipated. The program started with five [non-governmental organizations] as [partner organizations]. By the project closing, the number had risen to 30 [partner organizations] installing 60,000 [solar home systems] per month under a competitive business model.

*Id.*

181. *Id.* at 15.

The data collected through project [monitoring and evaluation] had a strong impact on improving project implementation. In particular, in the case of the [solar home systems], feedback from the field helped the project team . . . incorporate new technical specifications and technologies, such as LED lights, to better serve lower-income households. Feedback from the project teams also proved crucial for the establishment of improved [solar home systems] testing facilities and improved service provision for [partner organizations].

*Id.* As the market for these systems developed, the subsidy per system declined from an assumed seventy dollars to an actual twenty-five dollars, and the project expanded the range of sizes for systems distributed. *Id.* On the other hand, the systems actually performed at thirty-three percent less efficiency than was assumed. *Id.* at 38-39.

182. REPORT NO. ICR2609, *supra* note 172, at ix, 13-14.

project reported actual economic internal rates of return for its major components.<sup>183</sup>

The evaluation of this project contributed to learning from experience in many ways. The ICR listed twelve lessons learned for project design, implementation, monitoring, and evaluation.<sup>184</sup> These include: “Consumer buy-back schemes reduce the perception of risk and increase uptake of [solar home systems]”; “It is crucial to establish quality assurance of product performance at the beginning of a project, and quality monitoring and enforcement among [partner organizations] is essential”; “Stricter qualifications criteria to attract genuine bidders and enhance product testing”; and “Monitoring of the system and record keeping is necessary to ensure actual installation and replacement.” The report also presented and analyzed beneficiary surveys, and described four unintended outcomes and impacts.<sup>185</sup>

#### V. CASE STUDY: OPPORTUNITIES FOR PROJECT EVALUATION IN SUSTAINABILITY EFFORTS AT THE UNIVERSITY OF ILLINOIS

Sections III and IV *supra* provided an immersion into the purposes of and support for project evaluation along with the processes for designing, monitoring, assessing, and improving projects. Instead of summarizing this information here, the guidance from the federal government and World Bank efforts will be referred to in the recommendations developed in the following case study. This analysis of one campus sustainability fund also draws on the strengths and weaknesses of the other funds discussed in Section II *supra*.

##### A. Overview of Campus Fund and Processes

The University of Illinois at Urbana-Champaign (UIUC)<sup>186</sup> touts its commitment to and achievements in campus sustainability.

183. *Id.* at 21-22, 38-43. For the solar home systems program, the economic internal rate of return (EIRR) was estimated at forty-two percent (net present value of \$118 million; no estimate done at the appraisal stage for this component). For grid expansion and reduced system loss, the actual EIRR of twenty-seven percent exceeded the estimate at the project preparation stage of sixteen percent. In contrast, the CFL component turned from an expected sixty percent EIRR to negative net present value because of the lamp quality problems and high breakage losses. *Id.*

184. *Id.* at 28-30.

185. *Id.* at 24, 47-50.

186. *Facts 2012-13: Illinois by the Numbers*, UNIV. OF ILL. AT URBANA-CHAMPAIGN, <http://illinois.edu/about/overview/facts/facts.html> (last visited Oct. 27, 2014). UIUC covers about 329 main campus buildings and 647 total buildings; 32,300

Among its highlights are making the Princeton Review's Green Honor Roll for two consecutive years (one of only twenty-two colleges to earn a perfect score); signatory of the ACUPCC, leading to adoption of the Illinois Climate Action Plan and a commitment to carbon neutrality by 2050; rated by AASHE's Sustainability, Tracking, Assessment and Rating System; member of the U.S. Green Building Council (USGBC) and home to a USGBC Students group; and creation of the Institute for Sustainability, Energy, and Environment.<sup>187</sup> Since developing the Illinois Climate Action Plan in 2010, UIUC has implemented hundreds of campus projects to tackle a broad range of sustainability issues.<sup>188</sup>

UIUC student votes approved sustainability fees in 2003, 2007, 2010, and 2014. As of 2014, fees of \$14.06 per semester per student generated about \$1.1 million annually.<sup>189</sup> The Student Sustainability Committee (SSC), responsible for allocating this fund (subject to an administrative approval which has never been denied), is comprised of twelve voting student members, four non-voting staff members, and six non-voting faculty members. Student members are appointed by the Illinois Student Senate and serve one-year terms. Working groups of the SSC members in six subject areas (energy, food and waste, water, land, education, and transportation) pre-review each funding application and make recommendations to the full committee for project funding.<sup>190</sup>

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undergraduate students; 12,200 graduate and professional students; 2,500 faculty (full-time equivalent); and 7,800 staff (full-time equivalent). *Id.* Other University of Illinois campuses have separate sustainability plans, financing and actions. *Id.*

187. UIUC Institute *Sustainability – News*, UNIV. OF ILL. AT URBANA-CHAMPAIGN, <http://illinois.edu/lb/imageList/2370>; (last visited Oct. 27, 2014); UNIV. OF ILL. A CLIMATE ACTION PLAN FOR THE UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN (May 15, 2010), *available at* <http://sustainability.illinois.edu/pdfs/Climate%20Action%20Plan.Final.pdf>.

188. UIUC *Welcome*, UNIV. OF ILL. AT URBANA-CHAMPAIGN ILLINOIS ICAP PORTAL, <http://icap.sustainability.illinois.edu/> (last visited Oct. 27, 2014).

189. *Referendum and Committee History*, UNIV. OF ILL. AT URBANA-CHAMPAIGN STUDENT SUSTAINABILITY COMM., <http://ssc.union.illinois.edu/referendum.aspx> (last visited Oct. 27, 2014).

190. *Committee Members*, UNIV. OF ILL. AT URBANA-CHAMPAIGN STUDENT SUSTAINABILITY COMM., <http://ssc.union.illinois.edu/committee.aspx>; UIUC SSC, *Bylaws* (last visited Oct. 27, 2014); *See*, UIUC SSC, *Bylaws*, UNIV. OF ILL. AT URBANA-CHAMPAIGN STUDENT SUSTAINABILITY COMM., <http://ssc.union.illinois.edu/Bootstrap/bylaws.pdf> (last visited Oct. 27, 2014); *Join The Committee*, UNIV. OF ILL. AT URBANA-CHAMPAIGN STUDENT SUSTAINABILITY COMM., <http://ssc.union.illinois.edu/join.aspx> (last visited Oct. 27, 2014). The Student Programs and Activities Office in the Illini Union provide administrative support for the SSC, including the full-time program advisor, accounting, and marketing.



As of spring 2013, the SSC had financed 108 projects through both grants and loans.<sup>191</sup> Some of the financings were large; projects allocated between \$150,000 and \$1.05 million each included several solar power systems (ground-installed and rooftop), LED lighting for a performing arts center, steam reduction at the main library, retro-commissioning occupancy sensors for the bookstore, a student sustainable farm to supply food to the campus, bike parking, energy shade curtains, a food compost facility, and an energy dashboard.<sup>192</sup> Several types of projects involved similar installations across various locations at different times, such as plantings on roofs, solar power systems, prairie gardens, lighting retrofits, occupancy sensors and other lighting controls, and electric vehicle charging stations.

Regarding measures of project costs and benefits, the SSC asks applicants to describe the projects' expected impacts. However, the SSC does not call for the applicants to identify specific performance metrics for predicting and tracking impacts.<sup>193</sup> Nor are the applicants required to describe methods and responsibilities for measuring and reporting impacts. Recipients of funding must file with the SSC progress reports each semester during implementation as well as a final report at the end of the project. The SSC's by-laws state few requirements for these reports; the progress reports must reflect problems with projects, and the final report must contain an accounting of funds spent.<sup>194</sup> The approval letter issued by the SSC is usually just one page; it commits the recipient to the project as described in the final application, but contains little additional detail on the rights and obligations of the grantor and grantee. The

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191. Anjana Krishnan, *Sustainability Funding Seeks Student Vote*, THE GREEN OBSERVER, <http://greenobservermagazine.com/ArticlesAndImages/fall2013/SustainabilityFunding.html> (last visited October 27, 2014); Julianne Micoleta, *Student Sustainability Committee Allocates for Projects*, THE DAILY ILLINI (Mar. 13, 2014), [http://www.dailyillini.com/news/campus/article\\_35a6f0c8-aa44-11e3-8786-0017a43b2370.html](http://www.dailyillini.com/news/campus/article_35a6f0c8-aa44-11e3-8786-0017a43b2370.html).

192. *All Projects*, UNIV. OF ILL. AT URBANA-CHAMPAIGN STUDENT SUSTAINABILITY COMM., <http://ssc.union.illinois.edu/projects.aspx>; (last visited Oct. 27, 2014); *Solar Farm*, UNIV. OF ILL. AT URBANA-CHAMPAIGN; UIUC iCAP PORTAL, <http://icap.sustainability.illinois.edu/project/solar-farm> (last visited Oct. 27, 2014).

193. *Project Requirements*, UNIV. OF ILL. AT URBANA-CHAMPAIGN STUDENT SUSTAINABILITY COMM., <http://ssc.union.illinois.edu/requirements.aspx> (last visited Oct. 27, 2014). "[P]lease describe the impact this project will have on this campus. Which aspects of sustainability will the project address? Does the project fit within one of the iCAP goals? If so, please describe. Does the project go above and beyond current university standards and policies? Please describe." *Id.*

194. *Bylaws*, UNIV. OF ILL. AT URBANA-CHAMPAIGN STUDENT SUSTAINABILITY COMM., § By-Laws § 8.3, <http://ssc.union.illinois.edu/Bootstrap/bylaws.pdf> (last visited Oct. 27, 2014).

SSC's by-laws state that it must prepare and publish an annual review of all programmatic initiatives and funding.<sup>195</sup>

In practice for SSC-funded projects, the use of performance metrics in predicting, tracking, and reporting impacts varies greatly. For one installation of solar panels, a website provides continuous reporting of energy output by specific array and in aggregate, with comparisons of actual measured production to expected and maximum outputs since the system was installed.<sup>196</sup>

In contrast, an application for a green roof that received \$67,300 in SSC funding refers generally to savings in energy and water use. The application provides a rough estimate of water impacts (saving 3,000 gallons per year); there is no estimate of energy impacts or impacts on GHG emissions, and no commitment to track or report any environmental or resource impacts.<sup>197</sup> The final report referred to long delays in installation, but did not explain them or suggest lessons for future projects. It noted that the water collection system had been used for a year while other components were being completed; yet, the final report repeated the rough estimate in the application of saving 3,000 gallons per year (no reported measurement of actual water impact). As for energy savings, the final report observed that the assessment was too soon

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195. *Id.* at § 8.4.

196. *Solar Panel Data*, COLLEGE OF BUS. AT ILL., <http://business.illinois.edu/SolarPanels/> (last visited Oct. 27, 2014).

197. *GreenLink Proposal*, UNIV. OF ILL. AT URBANA-CHAMPAIGN SCHOOL OF ART AND DESIGN + KRANNERT ART MUSEUM, 2-4 (Nov. 14, 2008), *available at* [http://icap.sustainability.illinois.edu/files/project/233/KrannertArt\\_GreenLink%20proposal.pdf](http://icap.sustainability.illinois.edu/files/project/233/KrannertArt_GreenLink%20proposal.pdf); *see also* UIUC SSC, GREENLINK AWARD LETTER, *available at* [http://icap.sustainability.illinois.edu/files/project/233/KrannertArt\\_GreenLink%20proposal.pdf](http://icap.sustainability.illinois.edu/files/project/233/KrannertArt_GreenLink%20proposal.pdf). “The rainwater collection system will allow us to harvest a natural resource and use it effectively, thereby cutting our current water use. The green roof will passively help cool the glassed space in the summer and help insulate the roof in the winter. . .” *Id.* The application’s entire description of the project’s environmental impact is: “At an estimated garden hose flow rate of 5 gallons/minute, 30 annual waterings of 20 minutes each will result in a tap water savings of 3,000 gallons/year. It may be possible to expand the collection and distribution capacity of the system to provide water for other landscaping nearby.” *Id.* The application’s entire description of economic impact is:

While we do not predict a significant economic impact on the campus, it is anticipated that the added insulation provided by the green roof will help to alleviate temperature control challenges in the Link Gallery, without need to expand cooling system capacity. It is hoped that the enhanced insulation will reduce the burden on the current central air system, which is long past its expected lifespan.

*Id.* *See also* UNIV. OF ILL. AT URBANA-CHAMPAIGN STUDENT SUSTAINABILITY COMM., GREENLINK AWARD LETTER, *available at* <http://icap.sustainability.illinois.edu/files/project/233/Final%20Allocation%20Green%20Link.pdf> (“It will help reduce energy costs at the facility and provide rain water for the surrounding gardens.”).

after installation to determine this impact, but the project team offered to monitor the energy usage over the next year, compare that level to the prior year, and send those results to the SSC. The discussion of user satisfaction was conclusory and without metrics (the green roof “has several wonderful effects to the school and students so far,” and on the day the plants were installed, “there was [a] buzz through the building and among the students”). The final report did not address any other environmental, financial, or student education impacts, such as on GHG emissions, cost savings, economic rate of return, or number of students in classes that study the green roof.<sup>198</sup>

In summary, the SSC does not require the applicants or recipients to develop a clear framework of performance metrics for assessing the proposal; tracking the implementation; reporting the post-implementation environmental, economic, educational, and other impacts of a project; and rating the project’s achievements. The process does not drive the project team to estimate and measure impacts tied to objectives of the fund, such as reducing GHG emissions or saving energy, water, and other resources.

Second, the proposal evaluation process does not consider the applicant’s commitment, staffing, and methods for collecting and reporting data on the project’s performance. Nor, because of the absence of strong evaluations of past projects, does the proposal evaluation process leverage potential learning from the experience of other projects on the campus.

Next, the report on project completion may be timely in terms of accounting for expenditures, but fails to provide for tracking and reporting costs and benefits that often develop and are measurable over years after implementation. That report should not be final in terms of ending the recipient’s obligations to track and report results to the SSC.

Finally, as of September 2014, there is no group focused on project evaluation. The voting members of the SSC are students with one-year terms prioritize project selection. The students, however, are not focused on either managing the data collection and reports by past recipients or on evaluating the impacts of and lessons from past projects.

As noted in Section II *supra*, campus sustainability funds should be careful in imposing monitoring and evaluation obliga-

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198. *A+DCGreenlink*, UNIV. OF ILL. AT URBANA-CHAMPAIGN STUDENT SUSTAINABILITY COMM., <http://ssc.union.illinois.edu/Projects/greenlink.aspx> (last visited Oct. 27, 2014).

tions on small projects. However, the SSC manages financings of about \$1.1 million annually, and has allocated amounts in excess of \$150,000 to many projects.

The good news is that none of these issues is new to grant-making organizations. As described in Sections III and IV *supra*, principles and processes to guide project monitoring and evaluation were developed over recent decades at the federal government and World Bank. In fact, campus sustainability funds are, in several important ways, in a strong position to address these issues. Campus funds, for example, have access to students who volunteer their time to gain experiential learning opportunities, facilities staff involved in implementation and operations, faculty with technical expertise and equipment to advise on measuring impacts, and faculty with project evaluation experience.

#### B. Revisions Suggested by Federal Government and World Bank Processes

The following three recommendations would revise the SSC's by-laws and funding agreements to strengthen project evaluation. These recommendations attempt to build on the experience from the federal government and World Bank, as well as other campus sustainability funds. The proposal also tries to achieve feasibility and net benefits in light of the student-led governance, resources, and operations of the SSC. Furthermore, the recommendations are generally applicable to other campus sustainability funds.

##### 1. *Amend By-laws for Monitoring and Evaluation Working Group.*

###### *a. Description of Change.*

As of September 2014, the SSC has six working groups, each with a focus on one subject area for potential campus projects. The working groups develop expertise in that area and pre-review relevant proposals. The first recommendation is to form a new working group focused on monitoring and evaluation. Its scope would span aspects of pending proposals, on-going projects, and completed projects across all subject areas.

The students in the new monitoring-evaluation group would be drawn from the SSC members. To establish some separation between the evaluation operation and the people responsible for fund management, the SSC's chair and vice-chair should not be members of this working group. The student members of this working

group would be advised by at least one faculty member with expertise in project evaluation and at least one facilities staff with experience in measuring the usage and costs of energy, water, and other resources on campus.

This working group would provide a pre-review of proposals, looking at their adequacy in the following respects: (1) identifying performance metrics; (2) estimating costs and benefits; (3) committing to data collection and reporting of impacts during and for a reasonable period beyond the completion of implementation; and (4) drawing on the experience from other projects on campus. This pre-review would occur simultaneously with that of the relevant subject matter working group. A solar photovoltaic panel proposal, for example, would go to the energy working group—addressing whether this type of project complies with the strategies in the Illinois Climate Action Plan and the SSC's mission; whether the technology is innovative and cost effective; whether to structure any financing as a grant or loan; whether the proposal has sufficient student involvement; *etc.* The monitoring-evaluation working group would examine different aspects of the solar panel proposal – addressing whether the proposal reflects experience from other campus solar energy systems; whether there is a clear identification of relevant energy, environmental, educational, and financial indicators; whether there is a feasible plan for monitoring performance during and after installation; *etc.* The two working groups should coordinate their pre-reviews, provide integrated feedback to the proposal team, and report their recommendations on final proposals to the full SSC committee.

For funded projects, the monitoring-evaluation group would provide oversight for the project teams in tracking performance indicators, review their reports on implementation and impacts, and develop post-implementation assessments of projects. Students in this group would present their project evaluations to the entire SSC for use in selecting new projects and addressing problems that arise with on-going implementations.

Students participating in the monitoring-evaluation working group would contribute to the success of sustainability projects on campus and gain valuable field experience in project monitoring, evaluation, and management. In addition, they might be interested in obtaining course credits for their work, perhaps through an independent study or experiential learning course taught by a faculty advisor to the working group. In amending the SSC's by-laws to create this working group, there may be a need to add several stu-

dent members to the SSC in order to provide sufficient capabilities for the monitoring-evaluation activities.

*b. Guidance from Project Evaluation Principles and Practices.*

While the structure of the proposed monitoring-evaluation working group does not appear in any other campus sustainability fund analyzed for this article, the proposal reflects important tools that have proven useful for the federal government and World Bank.

In terms of a group focused on evaluations, federal agencies employ, pursuant to the GPRMA, chief operating officers, performance improvement officers, and associated staff with responsibilities for program evaluation. They also have OIGs for the purpose of audits and investigations.<sup>199</sup> At the World Bank, the Independent Evaluation Group reviews programs and projects.<sup>200</sup> These structures supplement the project teams' reviews and they utilize personnel internal to the organization who have an identity and professional orientation separate from the people responsible for selecting and managing projects.

The group's degree of separation needs to strike a balance. On the one hand, the evaluation process should not be biased through control by the senior project officers (as was noted in some World Bank assessments<sup>201</sup>). On the other hand, the evaluation process must engage and inform the senior officers in order to influence project selection and management (to avoid the isolated, "check-the-box" approach to evaluations under the GPRA and some World Bank assessments<sup>202</sup>).

The proposal stops short of recommending an evaluation group outside of the SSC, along the lines of the GAO or Performance Improvement Council chaired by OMB.<sup>203</sup> The students working on evaluations of campus sustainability projects should view themselves as assisting the effectiveness of the SSC, as opposed to independent investigators out to find fault. Nor should the structure invite the SSC to view the evaluations group as having oversight authority.

Is a dedicated, separate monitoring-evaluation group necessary? Some other committees managing campus sustainability

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199. See Section III.A.1.a and b *supra*.

200. See Section IV.A *supra*.

201. See Section IV.B *supra*.

202. See Sections III.A.1.a and IV.B *supra*.

203. See Sections III.A.3 and III.A.1.a *supra*.

funds have stronger commitments to monitoring and evaluation than the SSC, and appear to do so without separate groups. For example, the by-laws of North Carolina State's fund places the responsibility on the committee to document the environmental, social, economic, and other impacts of projects; The Green Initiatives Fund at the University of California, Berkeley, requires metrics-driven submissions; and funds at the University of Maryland, Clark University, and the University of Maine insist on multi-year tracking and reporting.<sup>204</sup> Moreover, there are models in the federal agencies and World Bank of improving grant management by adopting policy statements that direct certain evaluation procedures by the project teams, such as the Grant Accountability Project's recommendations, EPA's Environmental Results Policy, and World Bank's Policy on Monitoring and Evaluation.<sup>205</sup>

While it would be possible to increase the SSC's use of project evaluation through a policy statement without forming a new working group, the SSC already functions with six working groups for pre-review of proposals. Establishing and empowering a separate group dedicated to monitoring and evaluation would likely create expertise and commitment that would be more effective than just a policy statement.

## 2. *Amend By-laws for Annual Performance Reporting.*

### a. *Description of Change.*

The SSC's by-laws require the committee to prepare an annual review of its programmatic initiatives and funding. The by-laws, however, do not set forth further specifics for the content of this report.<sup>206</sup> The current requirement can be satisfied by an accounting of the fund's revenues and expenditures, a count of the total number of projects funded and proposals reviewed during the year, and short descriptions of the projects selected.

Annual reviews are important components of program evaluation, and the by-laws should establish the framework for making the SSC's annual reviews effective tools for learning from experience and communicating successes in outcomes. The SSC should be driven annually to address its progress in advancing clear, measured objectives for the fund. The annual review should quantify the estimated and actual impacts of the projects funded on the goal of improving sustainability on campus. The performance metrics

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204. See Section II.C *supra*.

205. See Sections III.B.1, III.B.2 and IV.A *supra*.

206. *Bylaws*, *supra* note 195, at § 8.4.

could include economic rate of return; reduction in GHG emissions; savings in energy, water and petroleum usage; amounts of recycled and landfilled wastes; amount of food supplied from the student farm; acreage of habitat restored; and other indicators.

Developing this portion of the annual report would help the SSC focus on the characteristics of the projects selected and the effectiveness of the project teams in delivering outcomes. Because the annual report is signed by the committee's senior officers, incorporating program evaluation into the annual review should lead to improvements in future project selection. The evaluations reviewed and prepared by the monitoring-evaluation working group would provide the basis for reporting the fund's impacts.

If properly adopted, this portion of the annual review would not preclude financing for innovative studies or other actions that do not deliver economic or environmental impacts captured by the chosen metrics.

While the current by-laws allow the SSC to use the annual reports to spur serious program evaluation, the student members are likely to focus on selecting new projects and minimize the resources devoted to the annual report. In exchange for paying substantial sustainability fees, students deserve to have results-oriented reporting by the campus sustainability fund. The fund's by-laws should state this commitment.

*b. Guidance from Project Evaluation Principles and Practices.*

In requiring annual reports, the by-laws for some other campus sustainability funds provide more direction toward effective program evaluation. As examples, the University of Maine specifies a section analyzing the collective economic performance of the funded projects, and North Carolina State requires an analysis of project impacts.<sup>207</sup> Yet, the proposal here is for more direction to analyze and report performance metrics than appears in the campus fund by-laws reviewed for this article.

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207. See e.g., UNIV. OF ME. OFFICE OF SUSTAINABILITY, GREEN LOAN FUND, UNIV. OF ME. OFFICE OF SUSTAINABILITY 5 (last updated 2013), available at [http://umaine.edu/sustainability/files/2014/01/Green\\_Loan\\_Fund\\_2013\\_v3.pdf](http://umaine.edu/sustainability/files/2014/01/Green_Loan_Fund_2013_v3.pdf). "Annual Report . . . Each summary shall describe the ongoing progress of the project in addition to the project's economic performance. Furthermore, the final section of the report shall provide an analysis of the collective economic performance of all the projects described therein." *Id.* N.C. STATE UNIV. THE SUSTAINABILITY FUND CONSTITUTION § 4.1 (2014), available at <http://sustainability.ncsu.edu/wp-content/uploads/2014/01/Sustainability-Fund-Constitution-and-Bylaws.pdf>. "Annually, submit a summary of the projects funded, account financial status, and project impacts." *Id.*



This recommendation builds on the processes applied to the federal agencies under the GPRMA, with explicit strategic objectives, program targets expressed with measurable outcomes, and annual performance reports addressing the achievement of those targets and objectives. The GPRMA's annual reports require performance indicators as part of the framework to "create a results-oriented culture" and for the "adoption of evidence-based strategies."<sup>208</sup>

The GAO's reports on duplication also reflect annual program performance reviews. In addition to making new recommendations for consolidation or elimination, these reports clearly present the progress toward implementing the past recommendations and quantify the associated savings.<sup>209</sup> As further support for results-oriented, data-driven periodic program evaluations, the federal agencies' retrospective reviews produce semi-annual reports identifying changes in regulations to be made based on public comments and internal analysis, tracking the implementation of such changes, and summarizing the impacts of those actions.<sup>210</sup>

Similarly, the World Bank uses its annual report to review key performance indicators for the impacts of its projects (individually and in aggregate) along with progress in achieving the Millennium Development Goals in each region. The annual report is not limited to an accounting for funds and description of program initiatives.<sup>211</sup>

### 3. *Add Monitoring Responsibilities to Funding Agreements.*

#### a. *Description of Change.*

Currently, the SSC asks applicants to describe the expected impacts of their projects. No performance metrics or assessment techniques are provided by the SSC for use by applicants, and projects have been funded with little more than vague references to savings. In some cases, recipients' final reports do not give the SSC data for assessing the impacts of the fund in terms of the fund's environmental objectives, such as reduced GHG emissions or savings in electricity generated by fossil fuels, water and petroleum.<sup>212</sup> Because of scanty data collection and reporting by recipients, the SSC

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208. See U.S. OFF. OF MGMT. & BUDGET CIRCULAR NO. A-11 *supra* note 87, at 1-3.

209. See Section III.A.1.c *supra*.

210. See Section III.C *supra*.

211. See Section IV.A *supra*.

212. See Section V.A *supra*.

must determine whether to fund similar actions without knowing from past projects the actual economic rate of return earned, whether the project delivered the estimated savings in resources, user satisfaction, or other measures of success.

In the funding agreements (incorporating by reference the final accepted proposals), the SSC should require that recipients identify relevant performance indicators; estimate expected impacts in terms of those measures; submit a monitoring plan for collecting and reporting data on the performance metrics (covering the implementation period and a reasonable post-completion period for continuing impacts); report on the causes of differences between expected and actual impacts; and provide a framework for evaluating the projects' success. If the initial application is deficient in this area, then the monitoring-evaluation working group should identify the problem and offer to assist the applicant in developing a stronger results framework.

Longer-term monitoring for projects' impacts is clearly necessary in many cases to capture actual effects on maintenance and replacement costs (such as lighting or boiler retrofits), energy and water savings (considering fluctuating usage and costs over multiple seasons), behavioral changes (such as usage of bicycles, buses and recycling bins), interrelated projects (such as installing occupancy sensors and later replacing incandescent bulbs with CFLs), and other considerations.

Recipients of small financings for feasibility studies and some other types of actions should be allowed to state that performance metrics are not applicable to their projects. For larger projects, any applicant claiming that it cannot track key performance indicators should bear the burden of explaining the hurdles to measurements, such as the lack of building-level metering of energy usage, water consumption, and wastes produced. The SSC would then be able to decide whether to fund the project and rely on estimated impacts, fund the project together with a plan for improved monitoring capabilities, or not fund the proposal.

*b. Guidance from Project Evaluation Principles and Practices*

This recommendation reflects best practices among campus sustainability funds as well as the policies and practices of federal agencies and the World Bank. Practices for applications and funding agreements at University of California, Berkeley, University of Maryland, University of Maine, and Clark University demonstrate the feasibility of requiring applicants to provide performance met-

rics and collect data. Funding agreements have specified that recipients are responsible for reporting indicators of impacts for several years after completion of funding. Moreover, student-led funds have provided tools and methodologies for recipients to estimate costs and benefits, such as reductions in quantities of GHG emissions and related social costs from electricity and petroleum savings.<sup>213</sup>

In grant management by federal agencies, EPA's Environmental Results Policy mandates that applicants provide a plan to track their projects' outputs and outcomes; describe their past performance in reporting such indicators; and compare their actual accomplishments against their anticipated impacts, with a discussion of causes for differences.<sup>214</sup> Similarly, OMB observed in connection with retrospective analysis of regulations that rules should be designed in advance to consider the collection of data, evaluation of actual effects, and revisions to the rules in response to their actual impacts.<sup>215</sup>

Finally, World Bank approval of financings demands an extensive analytic and monitoring framework involving planning and responsibilities for both World Bank staff and the recipient. The design phase must clearly state the objectives, indicators of how progress will be measured, plans for data collection, and mechanisms for using the interim measures in managing the project. The World Bank's policies emphasize the use of actual measurements at the end of projects to calculate economic rates of return and other indicators, with the final report delving into the causes of differences between expected and actual impacts as well as lessons learned. The final report rates the recipient's performance in terms of both implementing the actions and measuring impacts.<sup>216</sup>

In summary, the SSC currently is focused on awarding \$1.1 million in new financings annually. Although it approves several large, complex, innovative proposals each year, the absence of results-oriented, data-driven processes impair its ability to learn from experience. Increased monitoring and evaluation would improve project

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213. See Section II.C *supra*.

214. See Section III.B.2 *supra*. Along these lines, Section III.B.3 *supra* described a grant in which the DOE Inspector General carefully reviewed the recipient's commitment in the funding agreement to collect data to report actual impacts on fuel consumption and emissions (noting that recipient used estimates instead of actual measurements in its closing report); the Inspector General pointed out that actual measurements were needed to assess with confidence the project's costs and benefits.

215. See Section III.C *supra*.

216. See Section IV.A *supra*.

selection and management, expand learning opportunities for students, and raise the fund's ability to communicate its value to the campus community. Based on best practices at other campus sustainability funds, federal agencies, and the World Bank, the SSC should (1) amend its by-laws to form a working group dedicated to monitoring and evaluation; (2) also amend its by-laws to require its annual reports to track key indicators tied to the fund's objectives; and (3) add performance metrics and monitoring obligations into funding agreements.

## VI. CONCLUSION

Actions to promote environmental sustainability are critically needed in all sectors of global societies. At American higher education institutions, the sustainability activities are not limited to research and courses. Hundreds of universities and colleges are correctly and commendably seeking to reduce their environmental impacts and lead by example through campus sustainability projects. Along with funds from donors, government and campus administration, students at many institutions have overwhelmingly voted to pay higher fees to finance building energy efficiency retrofits, renewable energy systems, compositing, green roofs, and a wide range of other actions. Moreover, concerned students, faculty, staff, and administrators devote huge amounts of time to develop, select, and implement these projects. Far from being a fad, past efforts have addressed only a small portion of the opportunities, and universities and colleges have committed to increase the scale and scope of campus sustainability projects over several decades.

With new funds and decision-makers (often led by students in short-term positions or *ad hoc* committees), selecting new projects generally takes priority over evaluating and learning from past or on-going efforts. Yet, a wide range of campus projects entail substantial uncertainties as to their actual costs and benefits in impacts lasting years.

The long-term support for and success of campus sustainability funds depend on effective project monitoring and evaluation. Program evaluation, grant management and retrospective review processes at federal agencies and the World Bank are far from perfect in policies or practice. Nevertheless, the evolution of approaches over decades in these organizations demonstrates the importance of identifying key performance indicators, collecting measurements on actual impacts, evaluating projects in terms of

strategic objectives, and using evaluations to adjust program design, proposal selection, and project management. In short, project evaluation must be integrated into grant-making programs.

As shown in one case study, campus sustainability funds could benefit from dedicated monitoring-evaluation groups, annual reports that review their projects' impacts in terms of key indicators tied to their objectives, and funding agreements that obligate recipients to monitor and report performance metrics during and after completion of implementations.