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BOARD OF SCIENTIFIC COUNSELORS

SCIENCE AND TECHNOLOGY FOR SUSTAINABILITY MID-CYCLE SUBCOMMITTEE

Face-to-Face Meeting Summary
U.S. Environmental Protection Agency
Two Potomac Yard
2777 S. Crystal Drive
Arlington, VA
March 12, 2009

Welcome and Outline of Purpose

Dr. John Giesy, University of Saskatchewan, Subcommittee Chair

Dr. John Giesy, Chair of the Board of Scientific Counselors (BOSC) Science and Technology for Sustainability (STS) Mid-Cycle Subcommittee, welcomed the Subcommittee members to the face-to-face meeting and asked them to introduce themselves. He explained that the purpose of the meeting is to provide the U.S. Environmental Protection Agency (EPA) feedback and advice on its STS Research Program. His role is to act as the Subcommittee Chair and run the meeting. The Subcommittee members will discuss the Program and then prepare a report for submission to EPA.

DFO Welcome and Charge

Mr. Greg Susanke, EPA/Office of Research and Development (ORD), Subcommittee Designated Federal Officer (DFO)

Mr. Greg Susanke, Subcommittee DFO, thanked the Subcommittee members for their attendance and reviewed the Federal Advisory Committee Act (FACA) procedures that are required for all BOSC Subcommittee meetings. As the DFO, Mr. Susanke ensures that all FACA requirements are met and that records of board deliberations are made public. The minutes are being recorded by a contractor who will prepare a summary of the meeting. Following review by the Subcommittee members and certification by the Chair, the summary will be available to the public on the BOSC Web Site. All materials distributed to the Subcommittee are available to the public on the BOSC Web Site and the electronic public docket. A notice for all Subcommittee meetings must be published in the *Federal Register* at least 15 days prior to the meeting. All meetings and teleconferences involving substantive issues, whether in person, by phone, or by e-mail, that include one-half or more of the Subcommittee members must be open to the public. Prior to this face-to-face meeting, the Subcommittee held a conference call on February 12, 2009.

If Subcommittee members have questions for EPA staff, they need to be directed to the Chair, who will refer them to Dr. Alan Hecht, the Director for Sustainability. Dr. Hecht will answer the question or defer it as appropriate to STS Program staff. EPA staff members will not pose questions or comments to the Subcommittee unless it is at the request of the Chair. Mr. Susanke urged the Subcommittee members to respond candidly to the charge questions. He stressed that EPA considers the BOSC's advice to be a valuable resource for planning.

Although there were no advance requests from the public, an opportunity for public comment will be provided at 1:00 p.m.

Summary of Progress and Future Directions

Dr. Alan Hecht, EPA/ORD, Director for Sustainability

Dr. Alan Hecht explained that the STS Research Program developed the following charge questions for the Subcommittee: (1) Has the STS Research Program been responsive to BOSC recommendations? (2) Is the rationale for STS clear? (3) Are additional performance measures needed? (4) Are any changes needed to enhance the impact of the Program? (5) Is the initial focus on biofuels appropriate? (6) What other areas of national significance should be addressed?

The rationale for sustainability at EPA is driven largely by the Agency's perception that a systems approach was needed to address problems of national significance; a holistic approach would allow outcomes that lead to sustainable practices. The Program must anticipate and respond to societal issues, address statutory and regulatory mandates, incorporate administration and congressional priorities, and respond to requests from internal and external clients. Additionally, the current stimulus package includes a focus on sustainability. Sustainability is a broad mandate that can be sharpened with a focus on national issues.

The STS Multi-Year Plan (MYP) is comprised of three Long-Term Goals (LTGs). Under LTG 1, the Program develops measures and indices that are focused on sustainability; this LTG is linked to the *Report on the Environment*. LTG 2 helps decision-makers to be better able to adopt tools and methodologies to promote sustainability. LTG 3 includes the development or verification of innovative technologies for adoption by decision-makers; the annual P3: People, Prosperity, and the Planet Award competition is part of this LTG. All LTGs are linked to help decision-makers manage contemporary issues in a sustainable manner. Sustainability also is addressed under Goal 5 of EPA's Strategic Plan, which dictates that the STS Research Program will support Agency statutes (e.g., Pollution Prevention Act, Clean Water Act, and Clean Air Act) and, in 2010, the Program will focus its research on national issues and demonstrate how the concept of sustainability can be made operational.

Dr. Hecht provided highlights of the Program's responses to the 2007 BOSC program review. The response letter provides full details of the responses and includes an appendix with each BOSC comment and the Program's response. The Program: (1) increased its priority on sustainability metrics research; (2) refocused its green chemistry and engineering experts on green nanotechnology and sustainable supply chain design, including biofuels; (3) reassessed how it can extensively support Agency technology objectives (e.g., P3, Small Business Innovation Research [SBIR], Environmental Technology Verification [ETV]) in an effort to strengthen EPA as a whole; (4) identified biofuel research as a national sustainability issue and integrated research across the Agency; and (5) explored new partnerships with programs on life-cycle analysis, lean manufacturing and materials management, and green building design. The National Advisory Council for Environmental Policy and Technology (NACEPT) was responsible for the focus on biofuels, and the Program leads the Agency in this area.

Dr. Hecht provided several examples of areas in which the STS Program impacts the actions of EPA program offices and regions regarding biofuels. ORD was tasked to work with the Office of Air and Radiation, Region 7, and EPA's Counselor to the Administrator for Agricultural Policy to develop a biofuels strategy; the Program was given the lead in this endeavor. The resulting workgroup, which produced a Biofuel Strategy in July 2008, had representation from every program, region, and office within EPA. NACEPT and the Farm, Ranch, and Rural Communities Federal Advisory Committee reviewed the strategy and expressed the view that it was too long and complicated. In response to these comments, ORD is taking the lead in finalizing the development of the EPA Biofuel Coordinating Framework (i.e., "Biofuel Strategy"), which will be presented to the EPA Administrator soon. Additionally, the Program's lead within the Environmental Health and Safety Workgroup of the Interagency Biomass Research and Development Board allows the STS Research Program to lead interagency development of sustainable biofuel criteria and indicators. ORD's support of 14 new biofuel basic research projects influenced EPA's Ecosystem Services Research Program to launch the Future

Midwestern Landscapes Study. Finally, from 2007-2009, the SBIR Program funded six Phase I biofuel technology projects, and the P3 competition funded 21 Phase I and three Phase II biofuel technology projects.

Dr. Hecht highlighted the Program's accomplishments within each LTG. Under LTG 1, metrics already are in use to support decisions at the regional scale and influence future national dialogue on biofuels (e.g., San Luis Basin Project), and metrics for sustainable biofuel production have been proposed at the national level. One task of the Program was to define a set of science-based national criteria and identify indicators. The Program examined the entire biofuels supply chain with an interagency workgroup and produced a matrix with four criteria and approximately 20 indicators. This National Biofuels Action Plan (available on the STS Web Site at <http://www.epa.gov/sustainability>) is in policy review regarding trade implications. The next step is to engage stakeholders to maintain strong science. Within LTG 2, several decision-support tools in wide use (e.g., Waste Reduction Algorithm, Sustainable Materials And Residuals management [SMART] Decision Support Tool, life-cycle impact assessment models) have had an impact on decision-making. The Program successfully leveraged work already in place by partnering with the Portland Stormwater Marketplace, an EPA Science To Achieve Results (STAR) grant recipient. The largest success of LTG 3 is ETV, which is targeted for expansion because verification of green technologies is important, especially given the focus of the stimulus package. ETV is being used extensively within EPA's Office of Pesticide Programs (OPP) and Office of Air Quality Planning and Standards and by 31 states. The P3 competition is another LTG 3 success; it was developed to encourage designs for national and international sustainability and to train, educate, and encourage a new generation of environmental leaders. Also, P3 has impacts on and application to the developing world.

Future challenges, opportunities, and strategic directions to achieve sustainable outcomes include: (1) integrating sustainability research within the Agency and ORD, (2) justifying the need for core sustainability metrics and determining how to implement them in policy and planning, (3) promoting sustainable biofuel production and evaluating environmental impact of feedstocks, (4) redefining and expanding the Program's and Agency's role in technology application, (5) developing EPA sustainability metrics, (6) enhancing sustainability in implementing new energy and carbon legislation, and (7) internally developing a Green Building Research Plan. The Program is working with OPP and others regarding emerging issues on managing materials instead of waste (materials flow/materials balance) and lean chemistry. Several intra-Agency collaborations on sustainability highlight how EPA's offices are partnering to examine the issues in a holistic manner.

The fiscal year (FY) 2009 President's Budget for the STS Research Program includes \$19.97 million and 70.8 full-time equivalents (FTEs); this is a decrease from the FY2008 President's Budget of \$23.5 million and 76.2 FTEs. Dr. Hecht noted that this is one of the smallest ORD programs in terms of resources and FTEs. The bibliometric analysis for the Program indicated that its research publications are highly cited and published in high-impact journals. In conclusion, the Program is realigning its efforts to address previous BOSC recommendations and emphasize problems of national significance, and the Program is producing high-quality science. Although past and ongoing efforts are making a real difference, much work remains to make sustainability operational in EPA's existing structure.

Dr. Giesy noted the time and effort involved in gathering the information and materials about the Program and thanked the Program staff members for their efforts.

Dr. John Smith asked how the Program deals with legislative hurdles such as the Resource Conservation and Recovery Act. Dr. Hecht responded that the STS Program is not regulatory driven; however, the legal community of scholars has embraced the notion that it is impossible to deal with current problems and challenges with statutes written in the 1970s. The New York University Law School published a series of reports detailing this, and John Dernbach published a 2009 book entitled *Agenda for a Sustainable America*. More details can be found at <http://www.breakingthelogjam.com>. Regulatory leaders external to the Agency are advocating the need to break existing stovepipes to clear current

hurdles, and EPA is aligning with these leaders to move forward. The Agency retains authorization in areas in which there are no congressional prohibitions.

Dr. Wayne Landis noted that most of the papers cited in the bibliometric analysis were from the old Pollution Prevention Research and Development Program, which is not technically the STS Research Program. Dr. Hecht responded that Ms. Mya Sjogren would cover that issue in her presentation; he pointed out that the same scientists were involved with both programs.

In terms of metrics and LTG 2's analysis tools, Dr. Landis asked how it is known that the life-cycle analysis actually relates to sustainability. Can a reasonable answer be calculated? He did not see feedback occurring. Dr. Hecht replied that specifically focused outcomes measures are needed, including tools such as life-cycle analysis. When the Program was conceived, the outcomes were too general. Within projects, linkage between the three LTGs can be observed, but only in clear, specific examples can this integration be seen; this is not possible when speaking in general terms. As a result, the goal is to apply tools.

Dr. Landis asked if there can be sustainability without context. Dr. Hecht stated that the former BOSC review and the EPA Science Advisory Board agreed that a specific context is needed. If it is too general, then the Program cannot move forward without difficulties. The Program will revise the MYP following this mid-cycle review to sharpen the topics identified as important. Dr. Heriberto Cabezas, EPA, agreed that Program leadership realized that a specific focus was necessary. The decision was made to focus on sustainable supply chain design, which will combine ideas from life-cycle analysis and sustainability metrics so that the design is inherently sustainable.

Dr. Robert Anex noted that there was a disconnect between the San Luis Basin Project metrics and metrics found within LTG 2 and asked whether this disconnect worried Program staff. Dr. Cabezas responded that this is not a concern because the metrics represent fundamental processes that must continue for human existence. Straightforward indices can be extracted for rulemaking and the *Report on the Environment*. One San Luis Basin Project metric is in fact connected to the LTG 2 metrics. Dr. Hecht added that other groups are developing metrics, and these can be utilized and applied as needed within the San Luis Basin Project or any other local project. He stressed that ORD is not the only organization providing research for tool development.

Dr. Anex commented that perhaps too many tools and metrics are being developed for different issues (e.g., biofuels, nanotechnology) that fall under STS. Dr. Hecht agreed that this was a significant dilemma. There are many models, and there are many unknowns, such as how to organize them, their hierarchy, which should be used, which apply to the regulatory framework, and so forth. The most comprehensive models must be identified in a transparent process.

Performance Measures

Mya Sjogren, EPA/ORD

Ms. Sjogren explained that the partner survey that the STS Research Program conducted included a five-point scale that rated the quality, relevance, and timeliness of STS research. There was a 39 percent response rate to the survey. She provided some highlights of the survey results. Of the partners surveyed, only 11 percent were external to the Agency because there is a limit to how many nonfederal personnel can be surveyed without Office of Management and Budget (OMB) approval, which can take up to 6 to 9 months. Of those who responded, 55 percent rated the overall quality, timeliness, and responsiveness of the Program's research products and services as good or better. Two-thirds of the respondents were mostly or completely satisfied with the quality of ORD's scientific products and services related to the STS Research Program; therefore, quality was identified as the best aspect of the research. Nearly one-half of all respondents were mostly or completely satisfied with the Program's flexibility to accommodate partner needs. Only 37 percent of respondents were mostly or completely satisfied with the Program's

communication of science project process and products, indicating that most partners are not aware of the Program's products. Essentially, the partners are happy with the quality of the products that they receive, but the planning process for developing products needs to be more transparent.

The decision document analysis examined how STS Research Program publications are used for rule-making. More than 800 documents were examined, and 2.2 percent of these cited STS publications as a basis for rulemaking or policy decisions. This rate is slightly higher than that of other ORD programs. A bibliometric analysis was performed to assess the quality of Program science. The analysis, which covers a 10-year rolling period of publications (as does the decision document analysis), and found that STS Research Program publications are highly cited and of high impact. The Program performed 2.8 times higher than expected in terms of citations, with 28.3 percent of publications highly cited, and 3.5 times higher than expected in terms of impact, with 35.4 percent of publications published in high-impact journals.

Dr. Landis and Dr. Eric Beckman emphasized the importance of obtaining stakeholder feedback, and the requirement of OMB approval restricts ORD from receiving quality feedback in a timely manner; this is an important issue.

Dr. Beckman noted that most of the cited papers were from academics, which indicated that the Program included publications that were the result of STS research grants. The bibliometric analysis examines the impact versus science cited; although this is of interest to academics, it does not indicate that the science has had an impact on sustainability. Ms. Sjogren responded that this is the purpose of the decision document analysis.

Dr. Beckman asked whether the metrics need to be connected to what is being funded. Ms. Sjogren responded that the goal is to be able to track use of tools, models, and methods developed by the Program. Dr. Hecht added that bibliometric analyses are performed on every program within ORD; it is not specific to the STS Research Program. Ms. Sjogren explained that the decision document analysis attempts to address this, but having a suite of measures provides a broader picture, so other metrics for decision analysis are being developed.

Dr. Landis asked whether ORD performs goal-directed surveys. Ms. Sjogren responded that this presently is not done, but it may be helpful to do so in the future. Currently, the survey asks whether partners use tools in decision-making and the impact of the tools. Dr. Landis noted that more specific questions would increase the usefulness of the survey for the Program. Ms. Sjogren agreed and stated that narrative feedback is very helpful. Ms. Gail Bentkover, EPA, explained that the issue of metrics and impact is not limited to the STS Research Program. Each ORD program finds measuring impacts and outcomes a challenge, and the BOSC's comments may be useful to other ORD programs.

Mr. Ronald Thomas noted that the Program is doing nothing in terms of urban planning and development and land use. Consistency and guidelines are needed so that there is a comparative basis for analysis. There are other research avenues that are not pure science, but they are valid.

Subcommittee Discussion

BOSC STS Subcommittee

The Subcommittee members discussed details and strategies for completing their evaluation and shared their impressions of the information presented and the Program as a whole. Dr. Giesy explained that ORD seriously considers the BOSC's comments, and input from all Subcommittee members is needed. As this is a mid-cycle review, the Subcommittee's responsibility is to provide feedback regarding the Program's response to the previous full program review. The Program is in flux, and the MYP is changing; the Subcommittee's feedback and advice will be useful to the Program as it undergoes these changes. Ultimately, the Subcommittee must assign a summary assessment rating for the Program.

Dr. Landis stated that following the previous program review, the BOSC Executive Committee expressed concern about the definition of sustainability. The Program's response appears to involve a series of workshops. Dr. Landis was unsure whether this was an appropriate response and noted that it was not practitioner oriented. The Program must assume leadership in this area, although it is a difficult issue to address. Dr. Smith agreed and commented that the Program plans to use the biofuels topic to deal with the challenge of defining sustainability. The Program materials mention that dozens of possible indicators have been developed and note that the Program is dealing with generalities; using the biofuels issue may help in this area. Dr. Smith cautioned, however, that it is possible to have too many metrics. The workshops should identify key metrics, but Dr. Smith did not see this intent in the Program materials. Mr. Thomas agreed and also voiced his objection to the choices available for the summary assessment rating. Dr. Giesy noted this objection and explained that the BOSC Executive Committee has been working to develop the best method for rating ORD programs.

Dr. Beckman commented that the Program has been semi-responsive to the previous recommendations. Some responses have been too qualitative (e.g., P3, Technology for a Sustainable Environment). He agreed with the previous Subcommittee's emphasis on metrics and would like a quantitative response (i.e., requirements that P3 awardees must incorporate). EPA should be proactive instead of reactive and address emerging issues. For example, EPA should collaborate with the U.S. Green Building Council. He noted that biofuels will be a very challenging issue. Dr. Beckman stated that the Program addressed every point from the previous review, albeit qualitatively; quantitative responses would have been more specific.

Dr. Landis mentioned that the Ecological Research Program (ERP) incorporates sustainability, but there is no interface between the STS Research Program and the ERP. This would be one method by which to bring the ERP into sustainability. The knowledge that this needs to happen is present, but action must be taken.

Dr. Anex stated that the Program needs to address the underlying, systemic issues that led to the qualitative responses. The term "sustainability" was intentionally chosen to be broad for a purpose. Moving from this broad topic to specific metrics involves thoughtful planning to provide consistency over time; there must be a focus. The topic rests on a constantly changing world.

Dr. Smith thought that it would have been helpful for ORD to better articulate what the metrics would be in terms of a foundation, and the workshops should define the resulting objectives. The focus on biofuels is appropriate because it is a topic that includes many of the challenges that the Program is facing. The Program materials alluded to "dozens of indices"; including a table listing the indices would have been helpful. Dr. Giesy explained that the Subcommittee should recommend the types of details that ORD needs or should consider.

Following Dr. Giesy's request for a Subcommittee response to the first charge question, Mr. Thomas offered the following: The Program made a "conscientious response to a too limited definition to a broad purpose and charge." Dr. Beckman noted that the Program responded to all points made within the previous BOSC review report, but the responses lacked specifics. Dr. Landis commented that the details could be included in the upcoming MYP. He also remarked that one concern during the previous review was that the Program was not aware of what was occurring internationally in terms of sustainability; the Program's response that it would investigate this is not the same as actually doing so. Also, the concern that a process be put in place to ensure that efforts are not duplicated was not addressed.

Dr. Hecht explained that, with regard to defining sustainability, the Program response was that it must be defined in terms of specific issues in a focused manner. The intent of the workshops was to facilitate discussion regarding the definition of sustainability; the Program has completed a domestic and international inventory of all sustainability terms in use, but the Agency as a whole must embrace this. The Program must lead the Agency in this direction, and the intent of the workshops is to engage key

Agency officials so that all components of EPA can be in agreement and move forward in a holistic manner. The lessons learned from the biofuel work already completed have helped EPA formulate a regulatory framework. For a regulatory agency to deal with sustainability requires the Agency as a whole to be mobilized.

Dr. Giesy stated that the two most important issues from the full program review were that there must be a focus for the Program as well as an impact across the Agency. These issues have been addressed in a fundamental manner, and the Program has led the effort to mobilize the Agency as a whole. Dr. Smith agreed that the Program was responsive in that it focused on addressing the issues in a serious manner; however, not enough detail was provided to determine whether the stated actions will result in an adequate and representative set of metrics. Dr. Giesy noted that the Program is developing and groundtruthing specific techniques; the Subcommittee must determine whether this holistic approach that focuses on specific examples is the appropriate direction for the Program. Dr. Anex stated that the rationale is reasonable, and the Program's responsiveness to a national priority is laudable; however, the Program must ensure that it is not applying tools that are inappropriate.

In terms of the BOSC recommendation to leverage and communicate, Dr. Giesy thought that the Program was responsive. Dr. Beckman commented that the two rationales that the Program is proposing—organizing the Agency around a concept and addressing external organizations—are very different; the first is specific, whereas the second is nebulous, and Dr. Beckman was unsure whether they were consistent with each other. Although interaction with external groups such as academic and small business grantees is increasingly laissez-faire, the Program has some control and should exercise it. Dr. Smith noted that the Program was beginning to engage external organizations via different methods; although this is not as specific as the internal communication rationale, this is an appropriate direction. Dr. Beckman suggested that external components could support the internal components (e.g., testing tools). Dr. Smith noted that because of regulations, the Program must deal with a variety of different entities. Dr. Beckman stated that the Program has control over what it funds and can tailor Requests for Applications (RFAs) so that external research supports internal priorities. The Program should create a common vision for its internal and external components. Dr. Hecht appreciated this point and stated that the Program has leveraged the STAR grants program and released an RFA; this could help bring ORD's programs into alignment.

Mr. Thomas noted that best management practices in the private sector result in a great number of innovations, which are made by industry rather than government or nongovernmental organizations. The boundaries built within public agencies at the federal, state, and local levels have constrained the creative problem solving that is necessary to deal with current challenges. Research, as compared to regulatory activity, can provide the necessary creative thinking.

Public Comment

Mr. Susanke called for public comment at 1:00 p.m. No comments were offered so the Subcommittee's discussion resumed.

Subcommittee Discussion (Continued)

BOSC STS Subcommittee

To answer Charge Question 3, Dr. Giesy asked each Subcommittee member to suggest a performance metric that may be useful to the Program. Dr. Smith commented that there should be a method to determine how other ORD laboratories, the National Science Foundation, and the Department of Defense focus on sustainability. Given the budget, it would be beneficial for other EPA programs to focus on sustainability. Mr. Thomas suggested a bibliographic standard that examines activities other organizations are undertaking that are critical to achieving progress toward national sustainability (e.g., National Transportation Board of the National Academies, American Planning Association).

Dr. Giesy clarified that the metrics must demonstrate that the Program has achieved the outcomes set forth in the LTGs. Dr. Anex suggested examining documents that may not be identified in the bibliometric and decision documents analyses. Dr. Hecht explained that ORD pursues these analyses; they are not specific to the Program. In terms of demonstrating that the Program has had an impact, one method is to identify tools and approaches that have been adopted and used; another method is to determine how influential the Program has been in terms of changing policy, which is hard to quantify, with the exception of case studies. Dr. Hecht ensured the Subcommittee that the Program is diligently persistent in encouraging programs and regions to consider sustainability.

Dr. Landis noted that the U.S. Army emphasizes technology transfer, joint papers, and widely used tools as performance metrics. For example, placing Total Maximum Daily Loads (TMDLs) in a sustainability context could provide a significant impact for the Office of Water. Mr. Thomas commented that, for those advocating sustainability and similar transformations it is reassuring that EPA has the best track record in showing that it understands these concepts and has the expertise and abilities to move forward toward sustainability. The Subcommittee should advocate that the Program work within the whole system to project “big picture” thinking and information leadership.

Dr. Giesy asked whether a Program staff member was dedicated to tracking outcomes. Dr. Hecht responded that no one within the Program has been assigned this responsibility; the Program relies on the Office of Resources Management and Administration (ORMA). STS Program leadership has realized that a staff member dedicated to communicating Program results would be beneficial. Dr. Cabezas added that there are plans to hire several communications people for the laboratories.

Dr. Anex commented that other performance metrics are needed because the bibliometric analysis does not appear to accurately capture the Program’s performance. One method could be to require all staff members to keep a log of their activities and calculate the contributions. Dr. Landis agreed that the Program is under measuring its impact. Dr. Smith noted that there is no link to industry. Industrial project partnerships would be a metric, and industry is ready to collaborate. Dr. Hecht agreed that this was a potential performance metric and explained that the Program often works with industry but in the context of connecting industry to the appropriate entity within the Agency. A decision-support and modeling project with industry, however, is being planned. He mentioned that the Agency’s regulatory role also is an issue.

Dr. Giesy asked each Subcommittee member to e-mail him suggestions for additional performance metrics that the Program could apply before turning the discussion to Charge Questions 4, 5, and 6.

Dr. Beckman thought that the Program should focus RFAs and solicitations on sustainability. Ms. Bentkover explained that a solicitation would be released on March 19, 2009, with a special emphasis on sustainability. Dr. Giesy asked whether cooperative agreements within the grants program were made with academia so that graduate students, academicians, and industry have the opportunity to work alongside each other with EPA. Ms. Bentkover responded that the trend of grants has been to focus on establishing centers, which then can offer subgrants. Progress reviews are held to assess the research portfolios of the centers. Dr. Cabezas added that there are instances in which various groups work alongside each other, but he acknowledged that there are not enough of these opportunities. He also explained that the Program cannot direct research conducted under a grant or a cooperative agreement. Dr. Hecht explained that the Program did not have many external grants; it relies on the STAR grants program. Ms. Teresa Harten, EPA, mentioned that the ETV Program utilizes cooperative agreements with nonprofit organizations.

Dr. Beckman asked how ETV related to the Program. Dr. Hecht responded that it is a stand-alone program that supports LTG 3.

Dr. Landis asked whether the STS Program has consortia with universities via cooperative agreements so that expertise is available on call at previously negotiated rates. Dr. Hecht answered that he was not aware of such an agreement. Dr. Giesy commented that it does not appear that the Program has an external component. Dr. Hecht responded that one external program's funding was cut completely, so the STS Research Program is promoting the benefits and outcomes of that external program. Dr. Smith called attention to the fact that EPA states that it wants to promote sustainability, but the Program has limited resources and a narrow focus within ORD. He recommended that the STS Research Program be a focal point of EPA's programs. The Agency must decide whether sustainability truly is important; if so, there must be a driver, and the STS Research Program is poised to hold that position.

Dr. Giesy asked for comments regarding the Program's focus on sustainability. Dr. Anex stated that one fundamental problem is that EPA is seen as a regulatory agency and not necessarily part of the solution to these national issues, especially if sustainability has not previously been defined within EPA's past regulatory authorities. Therefore, the Agency will face a challenge in offering tools if it does not have regulatory authority. For example, the U.S. Department of Energy (DOE) has the funding and authority to overshadow the commendable work that EPA's STS Research Program has accomplished. Because EPA is a regulatory agency, competing regulatory or promoter agencies may not be willing to include EPA in sustainability discussions in a variety of areas, including biofuels or green buildings. Dr. Hecht explained that under the Energy Independence and Security Act (EISA), EPA's role in these areas increased; the Agency is required by law to assess the environmental impact of biofuels. As it is the only Agency with this mandate, this increases EPA's leverage. Dr. Anex cautioned that assessing environmental impacts is not the same as promoting sustainability, and EPA does not have the authority to monitor sustainability. Dr. Hecht explained that special language within EISA mentions sustainability in terms of environmental assessment, and this was included in the National Biofuels Action Plan. The only topic being debated internationally is biofuel sustainability. The Subcommittee members and EPA staff discussed the definition of biofuel; the entire biofuel supply chain is considered within EISA. Dr. Hecht explained that a legal mandate allows the Agency to direct biofuel sustainability issues; every region, program, and office within EPA has a stake in this issue.

Dr. Anex agreed that the biofuels issue is a good choice for the Program, but it must be proactive in addressing this issue. He thought greenhouse gases and green buildings will be problematic for the Agency. Dr. Beckman stated that EPA must drive the issue of how to make sustainability workable, as DOE currently drives the biofuel issue.

Dr. Giesy asked if there was consensus that the Program's focus on biofuels is appropriate. The Subcommittee members agreed that it was appropriate. Dr. Giesy asked Subcommittee members to send any concerns that the Program must address regarding the biofuels focus to him via e-mail.

Dr. Smith commented that the Program's focus on biofuels might be perceived as EPA placing barriers to biofuels progress; for EPA to be successful, the Agency must be viewed as an enabler and not as a barrier. Dr. Landis noted that airlines are concerned with biofuels and could be partners. Mr. Thomas noted that important issues that the Program should consider include transportation, energy generation, building consumption, and integrating land use transportation planning at the regional scale. Green buildings, for example, can have negative impacts as well as positive impacts. These are the types of issues that the applied planning and development fields are examining and they appear to be absent from the Program's catchment; expertise from applied urban research within academia could contribute to the sustainability process. A workshop that includes individuals who are dealing with sustainability at the applied metropolitan regional scale would be beneficial. Additionally, EPA should look to the U.S. Department of Transportation, which is advocating the integration of policies that relate land use to transportation. Although land use and transportation planning is a siloed, linear process and has been for many decades, the integration of transportation and land use experts is an important emerging field. Mr. Thomas noted that references to sustainable urban planning are contained within the written materials but not within applied activities.

Dr. Landis stated that urban, agricultural, and transportation sustainability are common within the area in Oregon in which he lives (e.g., “sustainable Watkins County”, “sustainable Willamette area”, “sustainable Puget Sound”), and he is not sure how the STS Research Program’s goals will allow this type of planning. How will all of the necessary components be integrated? Individuals want answers now and want to know what EPA is achieving in terms of sustainability. Dr. Beckman noted that these types of answers may grow out of the San Luis Basin Project. Dr. Landis agreed and stated that multiple and intense uses are economically viable and the question is how the STS Research Program can affect sustainability planning. Dr. Giesy cautioned that research and development of tools for larger issues should not be overlooked.

Mr. Thomas commented that regional agencies are most successful when acting as 21st century extension agents (e.g., focusing on education, technology transfer, and outreach). The Program’s applied research projects should include the urban-to-rural transect, which includes urban, suburban, and exurban/rural areas; the Program’s research should be cognizant of these areas and the boundaries of regional agencies because they possess data sets and comparative analysis systems that could be useful. Dr. Smith agreed that urban planning is critical, and he has not seen it addressed. Dr. Landis noted that if EPA can develop tools, this would be a significant transfer.

Dr. Anex noted that during the past few years, it has become apparent that the nation’s infrastructure design is not optimal, especially in terms of handling natural disasters and terrorist events. The current administration is investing a significant amount of funding in infrastructure, and it would have been beneficial to have tools for redesigning infrastructure in place prior to this emphasis. Government funding will be invested in this area regardless, but are the current investments appropriate, especially in terms of sustainability? Dr. Hecht responded that it is never too late to focus on sustainability, and the focus on infrastructure within the recovery stimulus will move forward. He explained that funded projects undergo approval and a regional planning process and are thoroughly vetted. External governmental policies also influence funding (i.e., per the new administration, projects that incorporate sustainability have an increased chance of being funded).

Program Rating Discussion

BOSC STS Subcommittee

Dr. Giesy stated that the Subcommittee’s report will be relatively short, as this is a mid-cycle review. Specific examples to support the narrative of the report will be needed. It is not the prerogative of the Subcommittee to comment on the Program’s budget. The summary assessment applies only to how well the Program has responded to the BOSC comments from the prior full program review. Mr. Susanke added that the rating should focus on Charge Question 1. Dr. Hecht stated that ORD leadership finds it helpful to receive input regarding the degree to which the Program has been responsive to the prior recommendations. Dr. Giesy explained that the three pertinent documents in determining the rating are the Subcommittee’s report from the previous program review, ORD’s response to that report, and the “Discussion Paper on Progress and Future Direction for the STS Program” (i.e., “Strategy Paper”).

The Subcommittee members reached consensus on the summary assessment rating, assigning “Exceeds Expectations” to the Program’s overall response and progress since the last full BOSC program review. The justifications for the rating were as follows:

- ✧ The Program is attempting the difficult challenge of filling “white space” and being agents of change within the Agency.
- ✧ The biofuels work exceeds expectations in many areas, including the fact that it came about quickly.

- ✧ Several of the activities described at the meeting that were not detailed within the written materials exceed expectations, with the caveat that the Program is underrepresenting itself in the written materials supplied to the subcommittee.
- ✧ The Program is not a typical ORD program, and the tools may not be available to accurately measure the true impact of its outcomes and results.
- ✧ The Program has been very responsive to the previous BOSC recommendations and has communicated and expanded.

To be considered “Exceptional,” the Program would need to take risks. The Subcommittee thought this was the time to take risks because EPA needs to assume a leadership role in the area of sustainability. Although Program management has stated verbally that the Program has a leadership role, this is not thoroughly documented in the written materials. Additionally, the Agency and ORD have not partnered to the fullest on the issue of sustainability; EPA needs to embrace the Program.

Report Out and Wrap-Up

Dr. Giesy, Subcommittee Chair

Dr. Giesy noted that the Program has worked diligently to transform the Agency, and there is an extraordinary opportunity to carry this further as a result of the new mandate that EPA must implement an integrative approach. The STS Research Program’s efforts to integrate across EPA have impacted the Agency as a whole; the Program should continue these efforts as well as grow.

Dr. Giesy thanked everyone for their participation and adjourned the meeting at 3:48 p.m.

Action Items

- ✧ Subcommittee members will send their specific written comments on each charge question, particularly suggestions for additional metrics (Charge Question 3) and guidance regarding the Program’s focus on biofuels (Charge Question 5), to Dr. Giesy for incorporation in the draft report by Friday, March 20, 2009.
- ✧ Subcommittee members will send specific examples and narrative to support the rating of “Exceeds Expectations” to Dr. Giesy for incorporation in the draft report by Friday, March 20, 2009.
- ✧ Dr. Giesy will draft the report from the Subcommittee members’ e-mailed comments and the meeting summary.
- ✧ Dr. Hecht and Mr. Susanke will work together to ensure Subcommittee members have all materials in electronic Word document form (e.g., ORD response converted from PDF format, ETV materials).
- ✧ Mr. Susanke will arrange a follow-up conference call for mid-April 2009.

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**SCIENCE AND TECHNOLOGY FOR SUSTAINABILITY
MID-CYCLE SUBCOMMITTEE**

**FACE-TO-FACE MEETING AGENDA
March 12, 2009**

EPA Building at Two Potomac Yard
Fourth Floor Conference Center North, Room N-4830
2777 S Crystal Drive
Arlington, VA 22202

Thursday, March 12, 2009

8:30–9:00 a.m.	Registration	
9:00–9:10 a.m.	Welcome and Outline of Purpose	Dr. John Giesy, Subcommittee Chair
9:10–9:15 a.m.	DFO Welcome and Charge - Administrative Procedures and FACA Rules	Greg Susanke, Subcommittee DFO, Office of Research and Development (ORD)
9:15–10:15 a.m.	Summary of Progress and Future Directions - Discussion and Q&A	Dr. Alan Hecht, Director for Sustainability, ORD
10:15–10:30 a.m.	Performance Measures - Long Term & Annual, Client Survey, Bibliometric Analysis	Mya Sjogren, Acting Team Leader for Performance and Accountability, ORD
10:30–12:00 p.m.	Subcommittee Discussion	STS Mid-Cycle Subcommittee
12:00–1:00 p.m.	Lunch	
1:00–1:10 p.m.	Public Comment	
1:10–2:30 p.m.	Subcommittee Discussion	STS Mid-Cycle Subcommittee
2:30–2:40 p.m.	Break	
2:40–3:30 p.m.	Program Rating Discussion	STS Mid-Cycle Subcommittee
3:30–4:00 p.m.	Report Out and Wrap-up	Dr. John Giesy, Subcommittee Chair
4:00 p.m.	Adjourn	