

# National Science Foundation Advisory Committee for Business and Operations

Fall 2018 Meeting Minutes  
December 12-13, 2018

## **Attendance:**

Benjamin Brown	Program Manager, Department of Energy
Lee Cheatham	Director, Office of Technology Deployment and Outreach, Pacific Northwest National Laboratory
Robert Dixon	Interim Chair of the Department of Industrial and Systems Engineering, North Carolina Agricultural and Technical State University
Adam Goldberg	Director and Executive Architect, Department of Treasury
Charles Grimes (co-chair)	Retired, COO, U.S. Office of Personnel Management
Michael Holland	Vice Chancellor for Science Policy and Research Strategies, University of Pittsburgh
Ned Holland	Retired, Assistant Secretary for Administration, U.S. Department of Health and Human Services
Jan Jones	Retired, Federal Senior Executive, United States Capitol Police
John Kamensky	Senior Fellow, IBM Center for the Business of Government
Alicia Knoedler	Associate VP for Research, Director of the Center for Research Program Development and Enrichment, University of Oklahoma
Rachel Levinson	Executive Director, National Research Initiatives, Arizona State University
Joe Mitchell	Director of Strategic Initiatives, National Academy of Public Administration
Kim Moreland	Associate Vice Chancellor, Director, University of Wisconsin - Madison
John Palguta	Retired, Vice President for Policy, Partnership for Public Service
Theresa Pardo	Director, Center for Technology in Government, University of Albany - State University of New York
Susan Sedwick (co-chair)	Senior Consultant, Attain, LLC
Dave Spencer	Chairman, WTe Corporation
John Tao	President, O-Innovation Advisors LLC
Pamela Webb	Associate Vice President for Research, University of Minnesota
Doug Webster	Retired, Chief Financial Officer, US Department of Education

## **Wednesday, December 12, 2018**

### **Welcome/Introductions/Recap**

*Co-Chairs: Chuck Grimes and Susan Sedwick*

Susan Sedwick called the meeting to order. She welcomed all members in attendance and made announcements.

### **BFA/OIRM/OLPA/Budget Updates**

Teresa Grancorvitz provided the BFA update announcing staff changes and that the continuing resolution expires December 21. Discussion regarding the possibility of a government shutdown followed.

Wonzie Gardner provided the OIRM update announcing staff changes and the status of OIRM initiatives including testing of emergency preparedness procedures and the modernization of the NSF website to

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include an enhanced dashboard and profile management for current and pending employees. NSF remains focused on eliminating redundancy and increasing efficiency for information technology.

Amanda Greenwell provided an update from OLPA explaining the current federal budget situation.

## **Results from the 2018 Federal Employee Viewpoint Survey (FEVS)**

*Presenters: Wonzie Gardner, OIRM; Bill Malyszka, OIRM*

Overview: The Federal Employee Viewpoint Survey (FEVS) is an annual measure of NSF staff's engagement across several dimensions. Each year, all staff are invited to share their perspectives on their work unit, supervisor and leadership, and NSF culture. FEVS results are a major input into employee engagement action planning by each directorate and office. Senior leaders see the connection between engagement and productivity, willingness to change and innovate, and retention of our talent.

NSF staff are invested in the employee engagement process, as evidenced by the 76% response rate on the FEVS, compared to the government average of 41%. We have achieved four years of sustained improvement across all the engagement areas of focus – career development; performance and recognition; workload; and inclusion.

OIRM continues to build out resources that support the directorates and offices as they work to improve engagement. Along with providing full transparency on all NSF FEVS results, we also have incorporated a module on effective employee engagement strategies in our Federal Supervisor training course and published a curated engagement website with resources touching many topics, as well as providing consulting support to the directorates and offices.

NSF ranks 4<sup>th</sup> or 5<sup>th</sup> depending on the measure in its peer group and ranks 8<sup>th</sup> overall. NSF is still lagging behind the government average in employee workload and security. It is believed that the latter is a by-product of the move to its new location. NSF has a unique challenge in blending responses from its STEM rotator workforce with the traditional federal staffers – a challenge that NSF has to assess through supplemental means. NSF strives to be transparent in sharing detailed information back to the directorates.

### Committee Action/Feedback Sought:

1. What promising practices have you seen organizations like NSF use to sustain improvements in engagement?
2. NSF has a workforce with a diverse set of people and life experiences. How have you seen organizations successfully integrate STEM and non-STEM staff working side-by-side on the same mission?
3. NSF has made good progress on improving the FEVS Workload Index, which is a measure of staff perceptions of workload. NSF still sees room for working more efficiently through better tools, streamlined processes, and increasing staff capabilities. In today's climate of "do more with less", how have you seen organizations successfully balance additional effort to gain efficiency when staff already see their workload as being difficult to complete?

*Discussant: John Palguta*

John lauded NSF for moving back up again in the rankings among federal agencies to #8 in the Best Places to Work. Over 60% of federal agencies saw declines so NSF is doing well but John challenged NSF to get back in the top 5 next year. Workload continues to be a pain point and he suggested that NSF look at the highest scoring directorates for insights. He stressed the need for transparency but cautioned that the focus should be on having "engaged" employees rather than "happy" employees because the ultimate goal is getting the job done. Agencies/workplaces with engaged employees are

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more productive and have less turnover. He also stressed that NSF has a unique challenge in making sure that STEM and non-STEM rotators feel equally engaged. He also noted that data don't give you all the information you need but it does tell you what questions you should be asking to help you develop action plans. He cautioned that changes in leadership often impact scores making it imperative that NSF invest in leadership training.

Discussion: The discussion centered around acknowledging the ranking and obvious dedication on engagement of NSF employees. It is clear that NSF is doing much right. It is important to think about sustainability using a focus on continuous improvement rather than focusing on individual campaigns so the culture becomes entrenched. There were also questions about how NSF is anticipating the impact of the government shutdown on employee engagement and morale of which NSF is cognizant.

Recommendations:

1. The committee recommended that NSF assess how well the creative ideas (e.g., new elevators, shared printing environment) are working and how those are impacting efficiency.

## Facilities Subcommittees Updates

*Presenters: Matt Hawkins, BFA; Kim Moreland; and Jim Ulvestad, Office of the Director*

Kim Moreland shared the Cost Surveillance Subcommittee findings of its report which documents the Subcommittee's evaluation and findings regarding the sufficiency of NSF's end-to-end cost surveillance oversight procedures for all major facility construction and operations awards. The seven-person Subcommittee was chaired by Neil Albert, an expert in cost analysis, and examined four active major facility projects to assess the effectiveness of NSF policies and procedures and adherence to these processes for sound oversight. The projects included: the Antarctic Infrastructure Modernization for Science (AIMS), Regional Class Research Vessel (RCRV), Large Synoptic Survey Telescope (LSST), and Gemini.

The Subcommittee found NSF processes are sufficient to ensure compliance with the policies and procedures that govern major facilities. However, the Subcommittee report recommended the following for agency consideration as possible improvements:

- Consolidate all the manuals, standard operating guidance, policies and procedures (as appropriate) into a single document organized around topic areas.
- Look closely at some of the areas that are part of cost estimating.
  - Clarify the hierarchy of preferences for methodology in estimating
  - Strengthen documentation by NSF evaluators around the Cost Proposal Review Document (CPRD).
  - Enhance CPRD documentation to tell the "entire story" on how the cost analysis was conducted.
- Develop Independent Cost Estimates and Schedule Estimates as early as possible in the process, as they may inform trade-offs and the need for reducing scope.
- Improve the traceability of non-negotiable science and technical requirements so that the original proposal can be traced through final delivery of the project scope.
- Consider the problem of unknown-unknowns – those events that affect the project cost and schedule which are not foreseeable but will likely have an impact on total project cost.
- Given the magnitude and complexity of these projects, establish core competencies for recipient staff.

An update was also provided by Matt Hawkins and Jim Ulvestad on the activities completed as a part of the NSF implementation of the recommendations in the March 2017 report from the Subcommittee on use of cooperative agreements to support Large Scale Investments. Jim Ulvestad explained his

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understanding of his role as Chief Officer for Research Facilities (CORF) which was encouraging to the BOAC, particularly his role as a bridge between the directorates and the assurance roles of the Large Facilities Office (LFO) in bringing issues to resolution.

*Discussant: Mike Holland*

NSF has been exceedingly responsive to the Subcommittee's recommendations related to the (now former) Major Research Equipment and Facilities Construction (MREFC) Panel and the Large Facilities Manual (LFM) specifically in clarifying the difference between strategic decisions and the technical assessments related to passing stage-gate reviews. Mike said he didn't believe the Subcommittee fully appreciated that this disconnect was one of the potential major failure modes, so the alternate approaches to implementing six of the recommendations were fully justified. He stated that some of the recommendations were related to transparency and visibility at the executive level of projects in their very earliest stages. Mike remarked that there was a misinterpretation of the Subcommittee's recommendation as to who controlled review processes rather than who had to concur with the review process before they were launched but that he was satisfied with the NSF response to date. The recommendations related to chartering of FACAs, which NSF will not act upon, were intended to bring NSF in to greater compliance with other agency practices and with GSA FACA Secretariat guidance. The recommendations that intersected with enterprise risk management are largely still in development or under consideration. In summary, NSF has made significant steps forward in its approach to developing, approving, and overseeing major facility awards.

Discussion: Most of the discussion was related to the implementation of Subcommittee recommendations by NSF, specifically the three recommendations that were not implemented and the six that were an alternate approach. Two dealt with reporting line directly to the Director of the advisory committees including the BOAC. Mike Holland clarified that the recommendation was to bring NSF into alignment with the practices followed by the agencies and it was raised several times in the subcommittee's deliberations that there needs to be a formal touch point. However, Teresa explained that there is a great deal of coordination with the Office of the Director (including the CORF) and NSF believes there is appropriate communication with and buy-in from the Director who is the final sign-off on the Large Facilities Office's decisions. It was noted that the re-baselined National Ecological Observatory Network (NEON), is now nearing completion and on budget, which is one of the major facilities projects that precipitated many of these independent evaluations. NSF now has processes in place to ensure compliance with GAO good practices and has implemented the Subcommittee recommendations to the satisfaction of the full Committee.

## **Recommendations:**

1. Consider consolidating manuals, policies and procedures, etc. into one document to remove inconsistencies and confusion.

## **Actions Taken:**

**In a vote of the membership with two abstentions, the committee voted to accept the report from the Subcommittee on NSF's Strengthened Oversight of Major Facility Cost Surveillance.**

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## **Renewing NSF: Update on the Status of the Renewing NSF Effort**

*Presenters: Erwin Gianchandani, CISE and Joanne Tornow, BIO*

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In response to the Office of Management and Budget's (OMB) April 2017 memorandum requesting Agency Reform Plans as part of the agencies' FY 2019 budget submissions, NSF Director Dr. France Córdoba used that opportunity to look thoughtfully at how the NSF could transform itself to better support NSF's long-term research goals in an initiative called *Renewing NSF*. Erwin and Joanne reported on how NSF undertook an agency-wide brainstorming process last year to think deeply and critically about how it could as an organization transform to support and sustain NSF's long-term research agenda. That process produced over 200 suggestions from NSF staff, which were subsequently synthesized by senior leadership into four thematic pillars:

- Making information technology work for all (IT);
- Adapting the workforce and the work (Workforce);
- Expanding and deepening public and private partnerships (Partnerships); and
- Streamlining, standardizing, and simplifying processes and practices (Streamlining).

In spring 2018, a Renewing NSF Steering Group and four Goal Teams (one for each thematic pillar) were established with staff from across the agency. Using a facilitated visioning process, each Goal Team identified a Vision and Bold Steps for its respective pillar, which were intentionally broad and flexible so as to allow for various approaches and eventual pursuit of the best solutions for implementation. FY 2017 was the "ideation year," FY 2018 was the "planning year," and FY 2019 is the "go year" in terms of moving forward on implementing several of the Bold Steps in a staged fashion. As part of the transition to implementation, NSF is currently in the midst of an intensive agency-wide engagement period to gather inputs about the Visions and Bold Steps that have emerged from the Goal Teams. In this session, NSF sought advice and perspective on how to ensure NSF moves forward effectively on implementation of the bold steps. Specifically:

1. What are the key ingredients for successful management of this initiative?
2. Many of the bold steps are interdependent. What mechanisms would you suggest for identifying, cultivating, and managing the relationships among one another, including where resources requirements overlap?
3. What mechanisms would you encourage for internal communication and enhancing employee engagement to avoid "change fatigue"?

*Discussants: John Kamensky and Joe Mitchell*

John remarked NSF is doing an outstanding job of engaging employees but stressed that the challenge is that the four goals are inter-dependent, so accountability must be jointly owned and thus should engage beyond NSF to other stakeholders (OMB, Congress, external stakeholders), other agencies, universities, foundations, private sector, and even other countries. NSF has determined that the strategic need for its renewal effort is that the world in which it works is changing and it needs to adapt to these changes. The research world is increasingly interdisciplinary in its approach and NSF needs to change how it works so its professional disciplines operate less autonomously and more interdependently. Staff need to be assured that working on these initiatives will be a part of their jobs and they will have time to work on this. Joe cautioned NSF to ensure it avoids "change fatigue" and suggested that those who are fatigued be allowed to rotate off which would allow for broader participation and fresh perspectives. Joe urged that this work should be viewed and rewarded as an opportunity for career development. He cited eight major factors determining the success of efforts like this:

1. Ensure top leadership drives the transformation.
2. Establish a clear vision and integrated strategic transformation goals.
3. Design the organizational structure that will enable the vision.
4. Create a sense of urgency, implement a timeline, and show progress from Day 1.
5. Communicate frequently through multiple channels to multiple stakeholders.
6. Dedicate a powerful implementation guidance team to manage the transformation process.
7. Engage employees to seek their improvement ideas, build momentum, and gain their ownership of the transformation.

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8. Sustain the effort by nurturing a new culture, rewarding risk, and measuring progress.

Discussion: It was suggested that *Salesforce* software could be utilized as a data repository and tool for data sharing. To the questions of how NSF is dealing with resistance to change, Joanne reported that NSF is collecting those sentiments through the pollination wall and input portal. Part of the NSF culture is there are a lot of cultures. If an innovation works in one area or directorate, a new implementation mindset would be needed to implement across units. NSF values inclusion and works to understand what its people value. A specific example was cited: The NSF Way is to ask folks to look at things holistically and NSFers are willing to dive deep and provide feedback, good and bad, which is especially helpful. One final note of caution was to take care in not spending too much time admiring the problem from afar. Erwin responded that NSF is taking steps to move forward with the quick wins and assuring that progress is being made.

Recommendation: NSF should allow members of the implementation committee who are fatigued with change to rotate off, but NSF should create an alumni list to keep those who rotate off engaged.

## Renewing NSF – Partnership Pillar

Presenters: Ken Calvert, CISE and Barry Johnson, ENG

Ken and Barry provided a deeper dive into NSF's vision for the partnerships pillar: "Expanding partnerships to enhance the impact of NSF's investments and contribute to American economic competitiveness and security". The team identified several Bold Steps that were important to move forward with the idea that all the Bold Steps would be implemented by the implementation team at a future date. All four Goal Teams identified the idea of enhancing and changing culture at NSF, which was true for partnerships as well (culture both within NSF and with external partners). Most of their Bold Steps are highly difficult, with high reward potential and, thus, implementation will be a challenge but well worth the effort. The landscape study was the only Bold Step that looked to be low impact with low difficulty steps that could be rolled out sooner.

The vision for the partnerships pillar includes:

- A unified strategic vision to guide proactive identification and pursuit of partnerships that advance NSF's mission;
- Streamlined, flexible processes and tools for implementing a range of different types of partnerships, along with mechanisms for sharing knowledge and expertise; and
- Systematic and continual evidence-based improvement of costs and benefits of partnerships, through evidence-based assessment.

The Partnerships Goal Team developed six bold steps toward realization of this vision:

- Conduct a landscape study to explore "out of the box" partnerships.
- Develop a framework and method for identifying advantageous partnerships.
- Explore options for appropriate centralization.
- Build a partnerships toolbox: guidelines, best practices, examples, templates.
- Educate and train workforce to strengthen the culture of partnerships.
- Develop metrics, tools and processes to track all partnerships.

NSF sought advice and perspective on how to ensure NSF moves forward effectively on implementation of the bold steps. Specifically:

1. What elements of a partnerships program would you consider best suited for centralized management?

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2. What metrics do you suggest should be most important for consideration?
3. What mechanisms would you encourage to help strengthen the culture of partnerships?

*Discussants: Lee Cheatham, Theresa Pardo and Rachel Levinson*

Lee remarked that NSF is very good at making awardees successful, and a lot of that success comes from allowing awardees to do what they do. If any of the four pillars could change that, it would be this one. Partnerships at NSF “cannot be left to chance.” Forethought and strategy will be required. Lee challenged NSF to set priorities for partnerships and to examine the process by which priorities are determined. Lee suggested that there are fundamental, centralized principles that would be required in regard to partnerships and that each set of partnerships likely need their own metrics. A “go slow” mentality can serve as a prohibition, so the speed of partnerships might also be something that should be reviewed/measured/understood with regards to process metrics.

Rachel challenged NSF to define what “partnerships” mean to NSF with a cohesive definition. Attention should be paid to private sector relationships, and how the use of standard agreements and templates can help streamline the process for these partnerships and determine what is allowable. These controls may also alleviate concerns about the potential commingling of private/public funds and provide additional transparency. The current NSF partnership with Boeing (and others) could be shown as a positive example of how the private and public sectors can work together. NSF also has multiple programs (i.e. I-Corps) that can show what successful partnerships look like; NSF may want to consider surveys to determine what parts of the partnerships the communities found most positive. NSF may want to find those who may have not submitted a proposal and see if the barrier to them proposing can be addressed and/or removed. Paths to partnership should also be clearly disseminated so that others in the community know how they may be able to partner with NSF. Finally, internal cultural barriers and concerns within the Foundation and amongst the Directors might also need to be addressed; may not be change as much as clarity that helps NSF address them.

Theresa stated that it is important to understand the different types of partnerships with some being more collaborative, whereas others are more contractual. Building partnerships is generally an organic process that takes an investment of effort and structure. She urged NSF to avoid over-structuring, as this can sometimes hinder innovation. Conducting a landscape review is also important since it is not always the nature of the partnership but perhaps the conditions that existed that allowed the partnership to emerge. And finally, it is important to track the value of a partnership.

Discussion: The team’s use of the term “innovation” was lauded. Innovation requires commercialization and profit, and such collaboration with the private sector is very important. Partnerships almost always involve money changing hands, so the agreement is more formalized and thus it is important to define the type of partnership being sought for this reason. Figure out how to coordinate the “asks.” It was suggested to look at companies that are licensing NSF discoveries as potential partners and to coordinate “asks” across pillars. Barry remarked that this has been a challenge and a central point of contact to coordinate these “asks” is needed at NSF. Barry sees four “buckets” for projects: 1) discovery/invention; (2) innovation; (3) entrepreneurship; and (4) education. NSF needs to be fostering partnerships in all four areas, so entrepreneurship cannot be overlooked.

Some considerations for metrics (Industry-University Cooperative Resource Centers), particularly in regard to industry partnerships: look at number of industry partnerships, how often memberships are renewed or expanded, invention disclosure reports (what became of seed funding), increase in research expenditures (funds received from other folks), and the negatives (who took a pass on it). It was suggested that a survey could help provide this information. The Unified Shared Services Management Group at GSA might be able to help us determine what truly needs to be centralized in terms of process or the “Health Check” metric from colleagues at USAID that might be helpful. Finally, on the corporate side, measurement just can’t be about the money. Could there be a way to measure the impact of a

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corporate partner in terms of student placement? There should be ways of measuring corporate involvement/input that can be measured outside of number of dollars.

## Meeting with Drs. Córdova and Crim

Dr. Córdova began with offering appreciation to the members of the committee. Summaries of the sessions were offered as follows:

- FEVS – John Palguta noted that NSF should really be a top five best places to work in its class. Culture determines what people do when no one is looking. John urged the NSF to use the FEVS data to drive what questions NSF needs to ask to accomplish continued progress in employee engagement. Integrating science and administrative workforces at NSF can be accomplished by a focus on the NSF mission. In response to employee workload, NSF should focus not on “doing more for less” but on “doing things differently with less”.
- Large Facilities Cost Surveillance - Kim Moreland provided an overview of the process taken by the Subcommittee. The Subcommittee determined that the current policies are adequate to assure proper cost surveillance but there are some things that could be improved and Kim summarized those recommendations.
- Update on Large Facilities NAPA Recommendation Implementation – Mike Holland provided a status report of the NSF response. Overall, the NSF efforts have been appropriate and thorough with the exception of the implementation tasks that are still in process.
- Renewing NSF – John Kamensky compared NSF efforts against those of other agencies noting that most are moving to more interdisciplinary approaches. Dr. Córdova asked if some of this could be accomplished in conjunction with OMB since earmarking money for specific directorates or purposes has a chilling effect on the ability of NSF to fund interdisciplinary approaches. John suggested using the Office of Science and Technology Policy (OSTP) to carry that banner because it is not a challenge that is unique to NSF. NSF is doing a great job of engaging its employees. Joint accountability is needed for the four interdependent pillars/goals and to ensure sustainability. Rotating membership of task teams to avoid change fatigue and to also allow more people to participate. He suggested that NSF create an alumni list to keep those who rotate off engaged. Time must be carved out for employees to work on these initiatives.
- Partnership Pillar – Rachel Levinson cited examples of Intel and Boeing relationships as models. Her remarks urged centralization of efforts and the need to identify, collect and analyze appropriate metrics to assess success. Dr. Córdova announced a new partnership with five other agencies supporting NSF INCLUDES (Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science) to broaden participation.
- CFO Office of the Future – Adam Goldberg urged automation and opportunities for use of technology. NSF may not need to create new solutions but could look to what other agencies have implemented as solutions noting that artificial intelligence will be needed for NSF to go from good to great especially since workload is continually cited as area of concern by NSF employees and that is a low investment/high return solution for repetitive tasks.

## CFO Office of the Future

*Presenters/Panel: Dorothy Aronson, CIO/OD; Teresa Grancorvitz, CFO/BFA; Mike Wetklow, BFA*

Today's Chief Financial Officer (CFO) plays a central role at the crossroads of finance, technology and strategy in support of mission delivery. Although the private sector has adopted technology more quickly, federal CFOs are embracing the opportunity to modernize financial management and services. With the onset of new, emerging technologies, the role of the federal CFO office continues to evolve in the future. In this session, NSF's CFO, Chief Information Officer (CIO), and Deputy CFO discussed some of the modernization priorities and exciting new technologies that are being used to leverage and support a

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modern CFO office of the future. Promising tools such as robotics process automation and blockchain have the potential to enhance performance, increase accountability, and improve staff productivity while simultaneously advancing NSF's mission, the President's Management Agenda (PMA) and internal reform efforts such as Renewing NSF.

Dorothy cited NSF's initiative to convert all proposals into machine-readable formats and two experiments in Blockchain: a Communities of Practice in blockchain in partnership with a company from Silicon Valley and workforce building through *Career Compass* which will allow employees to plan for career advancement and give employees scheduled time each day dedicated to getting the skills needed to succeed. This represents a win/win as reskilling of the workforce is needed to address the need for retraining staff in digital skills to adapt to ABCD: artificial intelligence, blockchain, cybersecurity and data analytics. Universities are adapting their curricula as a result.

NSF sought advice and perspective on financial management modernization priorities and tools for a modern federal CFO office that supports mission delivery and reform efforts.

*Discussant: Adam Goldberg and Doug Webster*

Adam urged NSF to focus on removing barriers and constraints to moving in the ABCD direction. The Federal government cannot be talking about what is popular today but must be looking to the next big thing.

Discussion: One member stated that the government is running behind the private sector in this area. Recognition of data management as a profession is needed but it was noted that no one does it right, well or consistently. Blockchain is all about how we deal with and think about our data but the State of New York's data inventory project was cited as exemplary.

## Committee Business/Wrap Up

It was expressed that having the Committee agenda and electronic book at least one week prior to the meeting would be helpful.

The meeting was adjourned at noon.