

# 2014

Department of Energy  
Office of Science  
Communications and Public Affairs

## **[Office of Science Communications Plan]**

As the nation's primary supporter for research in the physical sciences, the DOE Office of Science (SC) has an unparalleled opportunity – and responsibility – to generate awareness, understanding, and support for scientific discovery and basic energy research. SC's Office of Communications and Public Affairs is charged with providing strategic counsel, generating and amplifying content, identifying and disseminating communications best practices, and analyzing the communications research literature to support this opportunity.

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# Executive Summary

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The landscape of public communication about science and technology is in a state of considerable flux, driven by changes in the way we do science, the technologies available for reaching audiences who care about discovery science, and by the information-seeking and information-using behaviors of the audiences themselves. This strategic plan is designed to align the Office of Communication and Public Affairs (OCPA) with this changed landscape, and to position the office well to take advantage of emerging trends in science communication.

This strategic plan represents four fundamental shifts in OCPA’s mission and activities:

1. A shift away from exclusively or predominantly internally produced content and towards a robust stream of content from the National Laboratories, university researchers, and other research partners that we curate and amplify.
2. A shift away from a strategy aimed at reaching a mythical “general public” and towards an outreach strategy focused on key publics that reach and interact with decision leaders and policy makers.
3. A shift away from content and communication strategy driven by simple enthusiasm and parochial programmatic interests and towards content and communication selections driven by alignment with DOE and SC enterprise messages and message fidelity, and informed by research and literature in the communication sciences.
4. A shift away from process-oriented metrics and towards a set of metrics that recognizes end goals of changes in awareness, understanding, and behavior by key stakeholders.

This strategy is designed to be responsive to changes in the communication landscape – that is, it isn’t wed to a particular communication technology or platform. Rather, it emphasizes the importance of developing relationships with key actors in that landscape – media, public information and public affairs officers, professional societies, and advocacy organizations – and leveraging those relationships to identify and empower third-party validators of SC’s mission, priorities, and research findings.

# SC Communications Opportunities

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As the nation's primary supporter for research in the physical sciences, the DOE Office of Science (SC) has an unparalleled opportunity – and responsibility – to generate awareness, understanding, and support for scientific discovery and basic energy research. SC's Office of Communications and Public Affairs (OCPA, designated SC-47) is charged with providing strategic counsel, identifying best practices, analyzing the communications research literature, and generating and amplifying content to support this opportunity.

The model that has developed over the years at SC is a unique one within the DOE system and, for that matter, within the federal R&D system. Scientific content is cleared from throughout the SC enterprise through program elements with the concurrence of OCPA; DOE corporate-level news material is cleared through a Headquarters Public Affairs (PA) function. This division of responsibilities allows OCPA to occupy a critical role that few federal science communications offices can: amplifying and leveraging news opportunities from our own research portfolio, from the 10 SC-stewarded national laboratories, from scientists and technicians who avail themselves of one-of-a-kind research facilities operated by DOE, from researchers who take advantage of DOE's multi-program research capabilities to drive original ideas forward, and from university and college grantees who conduct research with DOE-SC grant support.

This unique arrangement allows OCPA to concentrate on making sure that the *right stakeholders* receive or can access the *right information* at the *right time* for making or informing decisions about the nation's investments in basic research. In addition to providing strategic general guidance about how best to communicate research findings and policy from SC to broader stakeholder publics, we are in a position to fine-tune our communications to the audiences who matter most to sustainable basic research support in the physical sciences.

An unprecedented array of media platforms makes it easier than ever to reach critical audiences, and the disarray experienced by traditional media means that our targeted communications – if appropriately constructed and presented – are more likely to be received directly from us with fewer distortions than would have been the case with legacy mass media.

Moreover, there are particular messages that OCPA alone is likely to, and positioned well to, advance. Of special importance are ensuring that stories have appropriate acknowledgment of the federal support that made the research possible in the first place (while various other actors in this communications landscape are more likely to frame credit differently), are placed in their proper context of SC missions and priorities, and reflect to the maximum extent possible the collaborations and synergies that are unique to DOE/SC research.

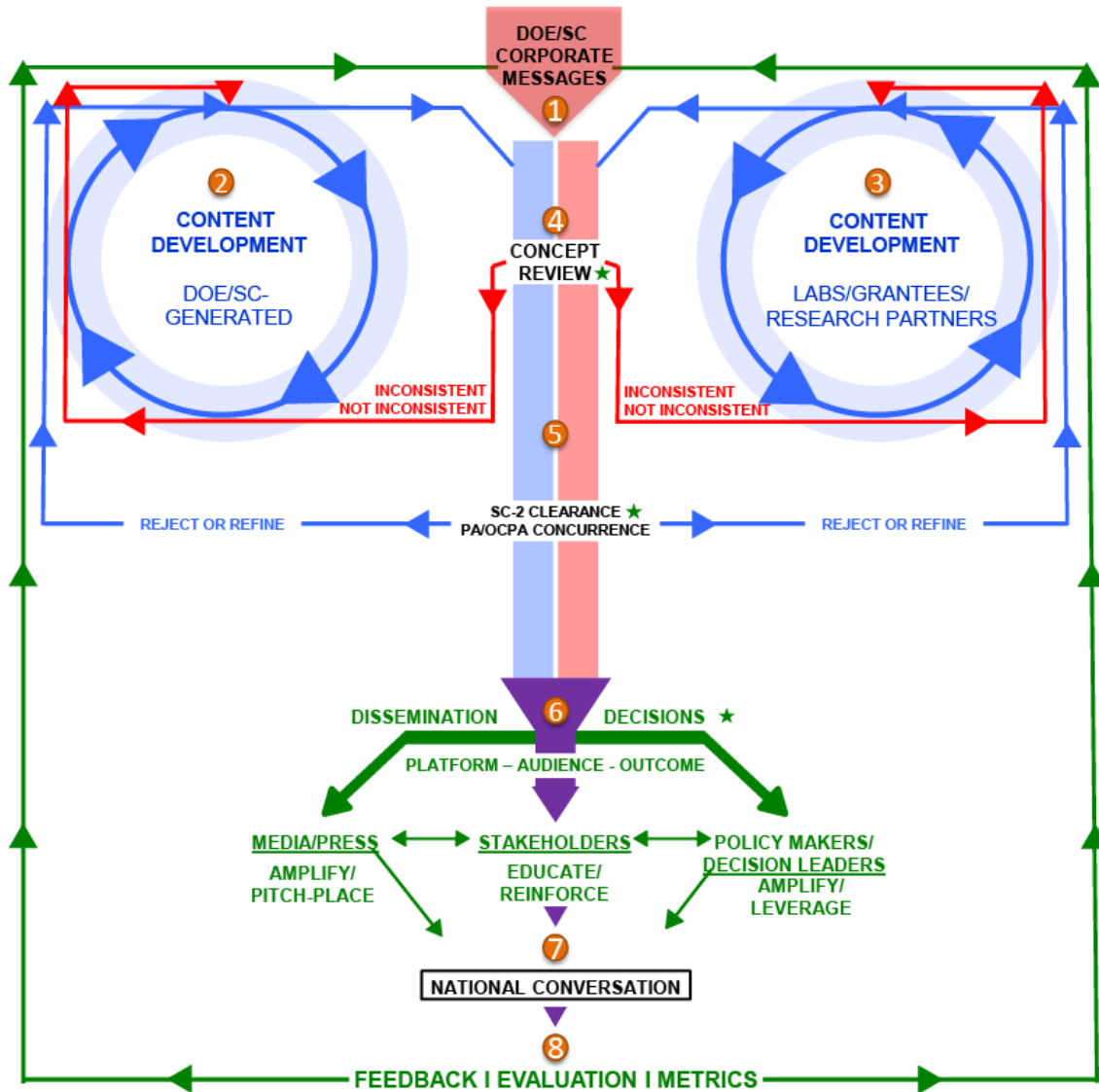
Finally, the crowded media landscape makes it essential for us to choose the right communication strategies to maximize the likelihood that our messaging will be seen or heard, understood, and acted upon. Key stakeholders have so many information sources at their fingertips that it is important for us to use the best methods and messages in order to break through the cacophony of often-competing messages in science and technology.

This approach demands new metrics that focus more on attitude and behavior of key stakeholder publics rather than raw data about who might conceivably have seen the message. For new media like Twitter, for example, it's important to recognize that social media generally depend for their effect on reaching a public for whom the issue in the tweet is already salient and for whom the tweet offers value-added information. Few people will come newly disposed to DOE science from a 140-character missive out of the blue. Our new metrics – which will need to be developed, benchmarked, and refined – will emphasize satisfaction with the relationships that key stakeholders enjoy with the SC research enterprise, including satisfaction with the levels of communication, transparency, and access to information needed for policy decision-making.

This new communication and public affairs model – Strategic Integrated Communications Management (SICM) – offers the potential to be as game-changing in communications as SC's research management is to science. SICM represents the vertical and horizontal integration of communications across the DOE research and communications enterprise. Because it will be grounded in communications science, we believe it will be inherently more credible to our scientific colleagues. And because it is targeted toward key publics rather than a broad and ill-defined general public, we believe it will suffer less from the “one-size-fits-all” dilution that attends most federal science communication.

The OCPA staff looks forward to engaging these key publics to tell meaningful stories of our success in advancing basic research in the physical sciences.

# STRATEGIC INTEGRATED COMMUNICATIONS MANAGEMENT (SICM)



SICM is the process of integrating higher-order enterprise messaging with content being developed at DOE and by its research partners. Decision points and activities from OCPA are figured in green.

At OCPA, all communications begins with alignment to overarching DOE and Office of Science Corporate Messages (1, red). Content Development (blue) is provided from either DOE/SC program activities (2) or the national laboratories, university grantees, and other research partners (3), and is assessed in Concept Review (4) by OCPA and our colleagues in the Office of Science for how consistent it is with the corporate messaging. If it is inconsistent, or if the corporate message is lacking entirely, the proposed communication is sent back to Content Development (2, 3) for reworking.

If content comes back to the SICM system and passes Concept Review, it proceeds to Clearance (5), conducted by SC-2 with the concurrence of HQ Public Affairs and OCPA. Content can emerge from Clearance with a decision to reject it, or to send it back to Content Development for refining or rewriting. Once it emerges successfully from Clearance with the concurrence of all parties, the content (blue) and message (red) streams are fully integrated (purple) and come to OCPA for Dissemination Decisions (6), including the audience to be targeted, the platform to be used, and the outcome desired. Dissemination informs a National Conversation (7) about the importance of basic research conducted by DOE, and OCPA evaluates the success of the communication (8) and uses this feedback to refine Corporate Messaging and Content Development.

# Role of Communications in SC

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The role of communications and public affairs in a research-performing institution is three-fold: generating awareness and understanding of the institution's mission and mission requirements, establishing and facilitating fidelity to enterprise messages, and conducting robust environmental scanning to identify emergent communications opportunities or problems. OCPA implements these tasks through:

- Message iteration and refinement: *We will articulate, promulgate, and disseminate enterprise-level messages about basic research for use by SC and DOE leadership and stakeholders.*
- Content identification and generation: *We will systematically identify opportunities to develop new content and leverage existing content to promote SC's research portfolio.*
- Media placement and amplification: *We will target strategically valuable media outlets to help carry these messages to our intended stakeholder audiences.*
- Public engagement and participation: *We will identify SC's key publics and understand their information-seeking behaviors in order to keep them informed and empower them as third-party validators of DOE science.*
- Environmental scanning: *We will regularly monitor media, legislative, and stakeholder communications to advise senior office and agency officials about emerging news and public affairs issues and concerns.*

These activities serve the goals of advancing awareness and support of basic research, educating and strengthening the ability of the DOE research community to communicate the value of its research, and informing a national conversation about discovery research in the physical sciences. We provide a forum, tools, and content to stimulate public dialogue about basic energy sciences and foster a culture of communication across the DOE science enterprise grounded in sound communications research and data-driven communications methods.



# Message Iteration and Refinement

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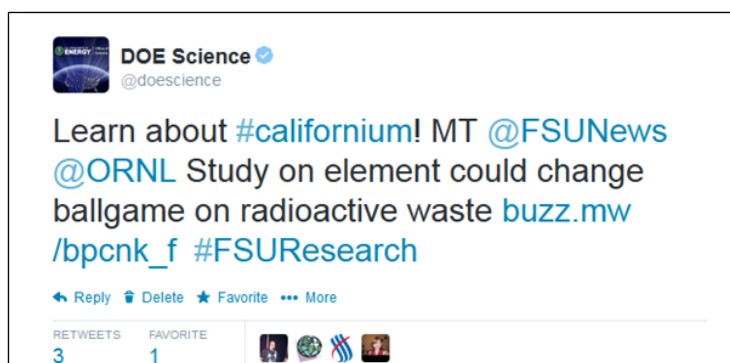
**Fostering corporate-level SC message fidelity, consistency of framing and themes, and congruency with DOE corporate messages, when delivered by SC leadership, programs, SC-stewarded national laboratories, and SC grantees/contractors.**

**DOE is an agency with many messages.** Often, these messages are aligned with mission priorities; just as often, they arise out of an abundance of enthusiasm to “get the word out” about the good job that DOE is doing and may lack alignment with DOE/SC priorities. Much of the communications challenge at DOE lies in enforcing message fidelity to ensure that DOE isn’t seen as a Babel of competing memes and messages and instead develops and deploys consistent, compelling messages.

At SC, there is an overarching message supporting the critical nature of basic science, expressed in the standard boilerplate that accompanies all SC-approved communications products:

*“DOE’s Office of Science is the single largest supporter of basic research in the physical sciences in the United States, and is working to address some of the most pressing challenges of our time.”*

It is imperative that this basic research message permeate and inform all communications products developed by and delivered from the Office of Science, its leadership, its contractors and grantees, and its stakeholders and advocates. While enterprise-level messaging can and should be tailored to individual audience needs and sophistication, iterations of this basic theme need to be consistent across platforms – and need to be consistently compelling.



OCPA is working with program elements in the Office of Science to develop a message grid with topline themes about basic research, augmented by subthemes that frame the

message by SC mission and further complemented by story lines that illustrate each theme/subtheme. The themes are constant, the subthemes may be altered to frame a discussion appropriately for an audience, and the story lines will be selected based on audience interest and sophistication.

Platforms currently in use to deploy SC messages include:

- SC Home Page/NewsCenter (general interest news stories)
- News releases (targeted at media outlets)
- Twitter (@-@doescience) (general audience interest)
- SC and DOE leadership speeches, testimony, events
- Editorial and op-ed materials for DOE leadership and third-party use
- Brochures and collateral materials
- Exhibits

### Message Coordination

**A valuable role that OCPA can play in message iteration and refinement is message coordination.** Within Headquarters, this is a relatively easy task: Once the primary messages are agreed upon, it is a fairly straightforward task in our role as editors and content providers of products such as brochures, testimony, fact sheets, and public presentations to recommend text or message iterations that are consistent with top-level enterprise messages. OCPA is typically at the table for these discussions, where it can make the appropriate recommendations.

Ensuring message consistency and congruency from our national laboratories and grantees is not so straightforward. The clearance process for national laboratory news products managed by SC-2 (for which OCPA plays a concurrence role) is very effective in preventing excessive and unwarranted hype, for guarding against promotion of program elements for which SC/DOE does not desire promotion, and for making sure that factual elements are correct. Clearance also ensures that agreed boilerplate information (which is the top-line enterprise message) is included on national laboratory news items that result from SC-sponsored research.

However, clearance typically does not work to ensure that important DOE/SC enterprise-level messages are included or articulated. The role of OCPA in this process, working through the DOE site office public affairs managers, is to educate lab public affairs officers about what those messages are and to reinforce the importance of referencing, as appropriate, enterprise messages in news products originating with the national laboratories or grantees.

Since DOE/SC/OCPA play no formal part in the clearance of news products originating from university or other non-national-laboratory grantees, message coordination and discipline generally are best done retrospectively, and will depend on developing close working

relationships with public information officers at the nation's major research universities to encourage them to reference, as appropriate, enterprise messages about DOE and the Agency's support of basic research in support of energy science. In conjunction with colleagues in SC-2, OCPA is developing language for potential guidance to principal investigators and institutional representatives regarding standard language to use for acknowledgment of federal support, a move that will provide a much more meaningful prompt for engaging DOE's research partners in dissemination of news about DOE-funded research.

# Communicating Research News

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**Deploy content strategically across multiple legacy and new media platforms to ensure that key SC internal and external stakeholders understand and value the return on investments made by Congress in basic physical sciences research.**

**SC exists in a content-rich environment:** From our programs to our national laboratories to our grantees, sufficient content exists to populate robust platforms for sharing news stories and informational content that reflect the wide scope of SC-funded science. Rather, the challenges at OCPA are determining which of the many news items that originate with SC support best align with our corporate messaging, identifying the audiences most likely to use or amplify our content, analyzing how our key audiences search for and acquire new information (and matching their information-seeking behavior with our delivery platforms), and finding out about upcoming news content early enough in the publication process to plan strategic dissemination activities.

## The Office of Science News Center

To support the strategic shift from generating all our own content to curating existing content streams, OCPA already has moved to bolster both the ease of use of the news pages at *science.energy.gov* and to dramatically increase the content reach of these pages to include/amplify material from SC-stewarded laboratories, user facilities, and DOE/SC grantees. Among recent changes are aggressive monitoring of national laboratory news feeds for content we could reflect to a larger national audience on the *science.energy.gov* website, consolidation of all news material on the site into a common searchable archive (as opposed to three different archives), and a naming convention for different kinds of news stories that more accurately reflect the nature of their content.

This “news center” approach requires that all content – original to DOE or amplified from one of our research partners – reside initially on SC home pages. The principal exceptions are re-tweets of Twitter messages that did not originate with SC and videos. We are currently discussing video strategy with OSTI as part of the ScienceCinema brand. We strategically manage our Twitter feed retweets to ensure message fidelity even though the original material does not reside on the SC website.

## Current distribution of news items by source on science.energy.gov

■ Labs ■ DOE ■ Universities



## Proposed distribution of news items by source on science.energy.gov

■ Labs ■ DOE ■ Universities



By judiciously curating our content stream, OCPA hopes to drive the content mix reflected on the SC home page from being dominated by National Laboratory news stories (current, top) to a more balanced mix of narratives from the National Laboratories, other research partners like universities, and from SC itself (proposed, bottom).

### Editorial Process Management

Key to the success of managing content flow is the development of a rigorous scanning and selection process for incoming content streams, whether generated at OCPA/SC or by one of our research partners (national lab, facility user, or grantee). OCPA has developed an editorial content management system that tracks all items in SC Clearance with their disposition in clearance, anticipated publication date, and platform(s) of dissemination beyond *science.energy.gov*; develops a two-week prospective calendar of news content refreshes on various SC news pages and our plans for amplifying or leveraging the content; and follows the assignment and tracking of internally generated news and feature stories.

Going forward, OCPA will develop and test various mechanisms to proactively identify news content before it is published by our research partners. This will entail developing better relationships with national lab public information officers (PIOs) and ensuring their compliance with “week ahead” planning reports for S-1 and other senior DOE leadership; developing trust relationships with scientific and technical journals to allow OCPA access to upcoming research publications that reflect DOE-sponsored findings; and cultivating a new community of university-based PIOs who are willing to share and amplify news opportunities involving DOE-sponsored research.

Date in	Status	Release	Host Institution	Program	Cleared
4/24/14	Headline 4.28.14	Discovering diversity, one cell at a time	DOE JGI	BER	4/25/14
4/25/14	No Amp.	Brookhaven Lab Scientist Ralph James is Named Materials Research Society Fellow	BNL	NNSA	FYI
4/25/14	No Amp.	ORNL Story Tips	ORNL		FYI
4/25/14	Tweet	NERSC, Cray, Intel Partner on Next-Generation Extreme-Scale Computing System	LBNL	ASCR	4/25/14
4/25/14	Headline 5.1.14	Argonne announces new Center for Integrated Resiliency Analyses	ANL		FYI
4/25/14	No Amp.	Jefferson Lab Project Team Receives Department of Energy Award	JLAB	SC	4/29/14
4/28/14	No Amp.	ORNL paper examines clues for superconductivity in an iron-based material	ORNL	BES	4/28/14
4/28/14	Headline 5.2.14	Edgy Look at Single Molecular Membrane: Berkeley Lab Researchers Observe Critical Edge States in 2D Molybdenum Disulfide	LBNL	BES WFO	4/29/14
4/28/14	No Amp.	US ITER preps for high performance plasma heating	ORNL	FES	4/29/14
4/28/14	No Amp.	RHIC Physics Feeds Future High-Tech Workforce: Daniel Magestro	BNL	NP	4/29/14
4/29/14	Headline 4.30.14	Harnessing Magnetic Vortices for Making Nanoscale Antennas	BNL	BES	4/29/14
4/29/14	Headline 5.2.14	Study in Science finds missing piece of biogeochemical puzzle in aquifers	ANL	BES BER NSF NIH	4/30/14
4/29/14	No Amp.	U.S. Department of Energy's Critical Materials Institute offers membership program	AMES	EERE BES	4/30/14
4/29/14	No Amp.	ORAU's Beck and Kerr recognized by Health Physics Society for exceptional service and scientific achievement	ORAU		FYI
4/29/14	Tweet	Brookhaven's Charles T. Black Named a Battelle "Inventor of the Year"	BNL	BES	FYI
	Headline 4.30.14	Multilayer, Microscale Solar Cells Enable Ultrahigh Efficiency Power Generation	Univ IL, Caltech		
	Headline 4.29.14	How to Create Nanowires Only Three Atoms Wide with an Electron Beam	Vander/OR NL		
	Headline 5.1.14	New Material for Flat Semiconductors	MIT		
4/30/14	No amp.	Whales hear us more than we realize	PNNL	EERE	5/1/14
5/1/14	No Amp.	Nearly two-thirds of all foreign doctorates are staying in the U.S. 10 years after graduation	ORAU	WFO	FYI
5/1/14	Feature 5.12.14	Scientists Find Solution to Two Long-Standing Mysteries of Cuprate High-Temperature Superconductivity	BNL	BES	5/1/14
	Feature 5.8.14	Visualizing the kinetic power stroke that drives proton-coupled Zn(II) transport	Case Western		
5/2/14	Headline 5.7.14	Resistive Switching for Computer Memory	ANL	BES	5/2/14
5/5/14	Headline 5.9.14	Berkeley Lab Develops Nanoscope to Probe Chemistry on the Molecular Scale	LBNL	BES	5/7/14
5/6/14	Headline 5.9.14	Plants' Oil-Desaturating Enzymes Pair Up to Channel Metabolites	BNL	BES	5/7/14

Pictured above is a grab of what came through the Office of Science Clearance in April and May 2014. The stories that come into clearance from SC-stewarded labs are used to build out the editorial calendar (pictured on next page) for the Office of Science homepage.

Apr 28-May 2					
	Releases for Amplification	Lab/Univ.	Feature/Science Headline	Twitter	Notes
	Monday: National Science Bowl	SC	Feature	Y	
	Monday: Discovering Diversity, One Cell at a Time	DOE/JGI	Headline	Y	
	Monday: 'Double-duty' Electrolyte Enables New Chemistry for Longer-lived Batteries	ORNL	Headline	Y	
	Tuesday: How to create nanowires only three atoms wide with an electron beam	Vanderbilt	Headline	Y	
	Tuesday: Secretary Moniz's Testimony Before the Senate Committee on Appropriations	SC	Headline		
	Tuesday: Sweet Spot For Salty Water	ORNL	Feature	Y	
	Wednesday: Harnessing Magnetic Vortices for Making Nanoscale Antennas	BNL	Headline	Y	
	Wednesday: Multilayer, Microscale Solar Cells Enable Ultrahigh Efficiency Power Generation	Univ. of Illinois	Headline	Y	
	Wednesday: Patrick Glynn's piece	SC	Feature	Y	
	Thursday: Argonne Announces New Center for Integrated Resiliency Analyses	ANL	Headline	Y	
	Thursday: New material for flat semiconductors	MIT	Headline	Y	
	Friday: Edgy Look at Single Molecular Membrane: Berkeley Lab Researchers Observe Critical Edge States in 2D Molybdenum Disulfide	LBNL	Headline	Y	
May 5-9					
	Releases for Amplification	Lab/Univ.	Feature/Science Headline	Twitter	Notes
	Monday: Approaching the island of stability: Observation of the superheavy element 117	ORNL/LLNL	Feature	Y	
	Monday: Probing dopant distribution: Finding by Berkeley Lab Researchers at the Molecular Foundry Opens the Door to Better Doping of Semiconductor Nanocrystals	LBNL	Headline	Y	
	Monday: Brookhaven's Charles T. Black Named a Battelle "Inventor of the Year"	BNL		Y	
	Monday: Study in 'Science' finds missing piece of biogeochemical puzzle in aquifers	ANL	Headline	Y	
	Wednesday: Resistive Switching for Computer Memory	ANL	Headline	Y	
	Wednesday: Early Career Announcement	SC	Headline	Y	
	Thursday: Berkeley Lab Develops Nanoscope to Probe Chemistry on the Molecular Scale	LBNL	Headline	Y	
	Thursday: Empowering Human Innovation: From EFRC to Entrepreneurship	EFRC	Headline	Y	
	Thursday: Visualizing the kinetic power stroke that drives proton-coupled Zn(II) transport	Case Western	Feature	Y	
	Friday: Plants' Oil-Desaturating Enzymes Pair Up to Channel Metabolites	BNL	Headline	Y	

## Strategic Content Sharing and Syndication

OCPA also seeks to identify strategic partners with whom we can share, cross-post, or syndicate content relevant to SC and its key stakeholders. While there are ethical considerations that hinder direct syndication arrangements with traditional media (the National Science Foundation came in for severe criticism for previous arrangements it made and then canceled with U.S. News & World Report), under the right circumstances OCPA can work with external news providers on a preferential basis on some content streams or news stories.

## Developing New Access Platforms

In an ideal world, SC audiences would regularly come to *science.energy.gov* to find information about DOE's research portfolio. We do not, however, live in an ideal world; SC lacks both the resources and the salience of content that drives viewership on the web for commercial concerns like Nike, Starbucks, or viral twerking videos. Moreover, available research reinforces the notion that audiences seldom "surf" for information on the web anymore; they are motivated information seekers driven by news aggregators using terms they select or go directly after rather narrowly self-defined content.

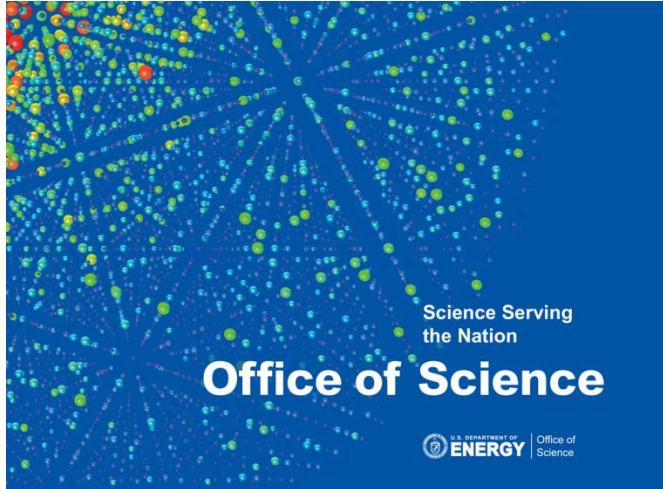
Rather than continue to compete ineffectively for a share of the online audience with our own web pages, OCPA increasingly is identifying and associating its content with places and platforms key stakeholders *already* visit or use to acquire new information. OCPA currently has a news dissemination arrangement with the American Association for the Advancement of Science's (AAAS) flagship communications enterprise, EurekAlert! EurekAlert! is a for-fee, nonprofit news distribution service serving primarily the university and journal communications communities and provides special access to embargoed journal content from many premier national and international journals to reporters and editors. Its 5,000+ distribution list includes primarily medical and basic science reporters at mass-media and trade publications and broadcast outlets. The SC-funded arrangement with EurekAlert! allows unlimited posting of traditional news and feature content related (mostly) to peer-reviewed journal findings by any of DOE's 17 national laboratories or by SC itself. EurekAlert! gives OCPA tremendous reach among journalists and science policymakers (the site is free and the audience is presumed to include science policymakers and decision leaders as well as journalists); each month DOE/SC-related news stories on EurekAlert! garner nearly half a million hits and include postings from most of the SC-stewarded national labs and a growing number of research universities conducting DOE-sponsored research. This news-only footprint is larger than SC's own entire web presence. Editorial control of the content rests exclusively with AAAS, which can accept or reject any submission from DOE or its research partners and which focuses overwhelmingly on news from peer-reviewed journals.

OCPA will be piloting a similar arrangement with Newswise, a for-profit company based in Charlottesville, VA, that also specializes in outreach to science journalists and science policymakers. Based on a successful model developed between the National Cancer Institute (NCI) and Newswise, the OCPA proposal includes aggregation of all DOE-funded content in a single portal, subsidized posting privileges for all 10 SC-stewarded national labs, and a regular "push" newswire to reporters who sign up for it. Editorial control would be primarily under the control of OCPA, and the range of acceptable stories for Newswise is much broader than it is for EurekAlert! Moreover, the journalist demographics for Newswise (also about 5,000 journalist subscribers) skews toward the more applied, technology, and business journalism contingent; only about half the journalist subscribership is held in common between the two systems.



## A “Family” of Publications

SC has had the luxury of producing multiple publications in what sometimes seems to be a blizzard of printed brochures, leave-behinds, and mailers. Successful branding campaigns use graphic similarity and graphic identity to reinforce messages about their brands; by contrast,



every publication we do seems cast from a different die.

OCPA is currently conducting an audit of SC public-facing print products with an overall goal of recommending reductions on printing and distribution costs, as well as better integration with existing top-tier publications and potential web-based mirrored content.

Notwithstanding the need to target individual audiences with

discrete materials, OCPA is recommending that SC migrate toward a common look and feel based on the current iteration of the nominal SC brochure, Science Serving the Nation/Office of Science (2013). Brochures, fact sheets, leave-behinds and other public-facing publications should, to the extent practicable, make use of the typographic, color, and graphic elements used in that publication to create a “family resemblance” among all DOE/SC collateral. Graphic identity standards developed by SC-2 for use of the SC logo should be monitored and enforced both within DOE and by contractor, grantees, and research partners.

# Media Amplification

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**Help strategically important stakeholder audiences find, access, and share news content about DOE-supported basic research in the physical sciences using legacy and new media.**

**The traditional strong suit of federal news offices is the development and distribution of press releases and pitching those stories to reporters in the expectation that media stories will result.** While this is an area of strength for OCPA, it no longer defines public information practice in science communications. Increasingly, press releases are dinosaurs in the world of driving media attention. They may stand as official statements of record, but their place in the process of media placements has been usurped by Twitter, tip sheets, email, and web/blog posts, all of which have advantages in timeliness and ease of use.

In one way, however, the media placement landscape has not changed measurably – effective media placement requires effective relationships with the media owners. This is especially true for successful placements (as opposed to advertising) in targeted media.

OCPA has traditionally benefited most from incidental media mentions resulting from entrepreneurial reporting. Our challenge is to grow the part of our media portfolio from deliberately targeted and placed media stories resulting from reporter relationships.

Not all media relations result in stories about DOE/SC-supported science. Good reporter relationships also can be responsible for decisions reporters make to kill stories unfavorable to SC, or to use a framing narrative that supports SC messaging rather than another framing device.

## Specialty Media Targets

Priority in OCPA's media strategy is given to placement in media known to be consumed, credible, and influential to policy makers, decision leaders, or other key stakeholders. This is a remarkably small media universe, even though it includes both mass media and trade publications.

Among the mass media, priority placement targets comprise six major daily newspapers based on reach and content (The Washington Post, The New York Times, The Wall Street Journal, The Los Angeles Times, The Boston Globe, and USA Today); public radio and several of its most important policy/news programs (All Things Considered, Diane Rehm, Fresh Air, On Point, Marketplace, and To the Point); three specialty newspapers/websites (Slate, Huffington Post, The Chronicle of Higher Education); two local radio markets (WTOP, Federal News Radio); and fair trade publications (Science, Nature, Physics Today, and Scientific American). Favorable

coverage in any of these priority targets represents a highly successful media placement outcome that reaches many of our principal audiences.

Local and regional editorial boards and public radio news/talk programs represent a separate priority placement goal, to be tapped in conjunction with travel by DOE/SC leadership.

### A Hyperlocal Strategy

While interest in science and science policy is most visible from national print and broadcast media, OCPA's placement portfolio needs also to reflect local and regional placements important to policy makers and decision leaders. OCPA has begun to develop and will greatly expand its outreach to local and hyperlocal media channels (such as Patch.com and similar outlets); local and regional bloggers, especially those housed at or covering major research universities and their communities; campus newspapers; and community enterprise publications.

### Amplifying Grants: A New Opportunity

Almost alone among DOE offices and other federal science agencies, SC does very little to promote grants and grant-making activities. OCPA proposes three approaches to this potential opportunity:

*Promulgating policies requiring grantees to provide acknowledgment of Federal funding.* Currently no DOE grantees or user facility users are required as a condition of their grants or user contracts to note that they received federal support for their work, either in scientific publications or in news stories based on supported research (although some journals may require it). OCPA will explore with SC-2 and other programs the feasibility of bringing DOE in line with other Federal agencies in requiring statements of Federal support in all public facing materials about supported research.

*Identifying and promoting interesting, important, or substantive grants.* Working with the SC programs and grants office and with the DOE Office of Congressional and Intergovernmental Affairs, OCPA proposes to do individual outreach on behalf of some priority grant announcements, based on their importance or public/Congressional interest. Customized outreach involves working with the grantee institution news office and federal relations staff in a coordinated way to communicate the science behind the grant, its place in the DOE research portfolio, and its potential in solving important scientific problems.

*Supporting site visits and grant announcements by DOE/SC leadership.* When practicable, OCPA will recommend grants for announcement in the field and will provide support and advance for leadership who plan travel in the field to national laboratories, national conferences, or research-performing institutions/universities.

## Integrating New and Social Media

A visible online presence for science increasingly is driven by visual narratives, either photographic or video. While a number of the SC-stewarded national laboratories were early entrants in the new media field, OCPA is playing catch-up in this area. Currently, we work with national laboratories and other research partners to identify multimedia offerings we can tag onto; OCPA proposes to develop a modest capacity to develop and edit its own short video features and interviews to accompany traditional text news and feature stories and to begin to populate the YouTube space and other video channels.

Similarly, OCPA proposes an expanded investment in social media. In October 2013, OCPA launched its own Twitter channel, which already has about 2,000 followers and rapidly has become an integral component of our message and content delivery system. Almost all news items placed on *science.energy.gov* are reinforced and amplified with a tweet; we also routinely re-tweet interesting stories from our research partners and stakeholders that align with SC and DOE corporate messages and themes. We are invested in the service MeasuredVoice to provide Twitter analytics from our use of this platform. OCPA also plans to host one or more Google chats/hangouts on popular science topics as a beta test to see if we can attract key audiences to the discussion, and to explore other interactive channels as they become available.

OCPA will also cultivate and maintain relationships with the growing scientific blogging community, especially those affiliated with Scientific American and the ScienceOnline community. These blogs are especially influential among science policy leaders and younger members of the scientific community who may not be attending to legacy media.

## Relationship with HQ Public Affairs

OCPA provides a liaison function between Headquarters Public Affairs (PA) and the program offices with respect to major media. All decisions about engaging major media are made by PA in collaboration with the OCPA director and staff. OCPA identifies and helps frame emerging news opportunities and coordinates news engagement for major media with PA and assists PA with finding interviewees or information and coordinating DOE responses to media inquiries.

## Relationship with Communicators at the National Labs

OCPA likewise provides counsel and guidance to the science communications staff at the national laboratories, especially the 10 SC-stewarded labs. We participate in the review and clearance process and work closely with communications management and with the DOE field public affairs staff in proactively identifying content suitable for amplification from Headquarters, suggesting message frames that enhance consistency with departmental messaging, and avoiding issues of sensitivity to program or departmental leadership. This relationship is strengthened by efforts toward development of Communities of Practice (see p. 23)

## Media Monitoring

OCPA has dropped its one-year trial of Vocus as a vendor for news distribution, placement, and monitoring in favor of Cision, a vendor with proprietary access to Lexis-Nexis and other national news databases unavailable from other vendors. The Cision contract also provides for use of high-end analytics to monitor placement, tone, and impact of news stories related to DOE-supported research.

# Stakeholder Engagement

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**Encourage basic science advocates and stakeholders to participate directly in conversations and decisions about the national investment in science.**

**While the Department and the Office of Science have some core messages, a one-size-fits-all strategy of content development for our many stakeholder audiences is destined to fail.** Rather, OCPA sees as its strength the ability to match-make between content we develop or amplify, the platforms on which that content is disseminated, and the audiences to whom that information is valuable or interesting. In an ideal world, our content and messages activate our stakeholders to engage and participate in events and activities that permit them hands-on awareness of and support for our programs and research.

## Audience Characterization

First, however, SC needs to identify who its critical stakeholders are, what kind of information they value and find credible, where they look for information when they need it, and what frames or mental heuristics each of our audiences uses to interpret our content. The Office of Science did a first-order analysis of these questions in 2001, when it engaged Jon Miller, a nationally recognized expert on science literacy and public attitudes about science, to identify who in the U.S. actively participates in the decision- and policy-making around science and technology issues (see Suggested Readings). This audience of motivated information seekers and science-attentive consumers of information is both discrete and relatively small (at the time, about 8,000 individuals in the entire U.S.), and is our initial target for content development and dissemination. But the data about these audiences need to be refreshed and the relative credibility of different media platforms needs to be re-assessed (Twitter and Facebook did not even exist at that time). Moreover, OCPA needs to develop – in conjunction with other DOE offices such as Public Affairs, Congressional and Intergovernmental Affairs, and others – targeted lists of stakeholders with discrete interests in parts of our portfolio but not necessarily the entirety of the Office of Science. With the acquisition of the Cision contacts management system, we can create custom lists for various issue areas within SC.

OCPA will work with internal audiences, both with colleagues throughout the Office of Science and within Headquarters to emphasize and promote our shared goals and coordinate messaging. OCPA must also extend its reach throughout the DOE enterprise, broadly, and strategically. The DOE enterprise can be defined to include national laboratories, contractors, and entities such as the Energy Frontier Research Centers and Hubs. OCPA must also place an emphasis on underutilized stakeholders (in fact, or by perception) and will actively seek and craft opportunities to work more closely with our university partners, user facility research teams, professional societies, and grantees to leverage our abilities to effectively and

strategically promote our messages and to increase the visibility of our efforts and achievements.

### Workforce Pipeline

An audience of special concern for SC and OCPA is the next generation of scientists and engineers who will be DOE's workforce of the future. Among a number of work and educational experiences for this audience on the program level is the flagship National Science Bowl (NSB) competition, now in its 25<sup>th</sup> year and one of the nation's largest science competitions in the federal government. OCPA's contribution to this program is media placement and amplification, which is vital to recruiting student contestants, teachers and coaches, and community supporters for the NSB. OCPA facilitated some 900 media stories during the 2013 competition season; for 2014 we deployed a new approach to Congressional office integration/amplification and an expedited media release process to more quickly connect teachers and coaches with media interested in covering the competition. This was a much more labor-intensive approach to amplifying NSB than we have utilized in the past, but it ultimately proved much more successful.

### Awards and Special Events

The Office of Science also manages many of the logistics for and the media amplification of several high-visibility scientific awards, including the Presidential Enrico Fermi Award, the DOE's E.O. Lawrence Award, and the White House's Presidential Early Career Award in Science and Engineering (for the DOE cohort). These awards activities present special opportunities to engage top-tier stakeholders through attending and participating in the ceremony and interacting with the awardees. However, DOE could also leverage its award winners by more aggressive promotion of the laureates to regional and local media, by engaging them in opinion or commentary writing, or by arranging special laureate events or lectures in the Washington D.C. area and elsewhere in the U.S.

OCPA and the national laboratories also coordinate amplification of the Nobel Prize winners (and other major science prizes) on those occasions where support by DOE has been instrumental in the laureates' careers. OCPA plans to create a formal template for amplifying these materials through advance development (with the involved research institutions) of potential press kits tied to those scientists who are acknowledged to be likely potential awardees.

Confirmation of the Higgs boson at CERN in 2012 led quickly to speculation that its discoverers would be awarded the Nobel Prize in Physics the following year. This presented a significant opportunity for coordinated amplification, since researchers at Brookhaven Lab and Fermilab played a significant role in the discovery through the ATLAS and CMS experiments at CERN.

So in anticipation – and well in advance – of the Nobel announcement, OCPA worked with Brookhaven Lab and Fermilab to prepare a joint press release highlighting SC efforts in the discovery, including quotes by both directors. The labs also produced a video showcasing SC’s role in the finding, lists of science and media contacts, several fact sheets, and feature stories.

Unfortunately, the federal government was shut down on October 8<sup>th</sup>, the day that the 2013 Nobel Prize in Physics was awarded to François Englert and Peter Higgs for the discovery of the Higgs. However, direct intervention by the OCPA director allowed Brookhaven Lab and Fermilab to post their releases, despite a previous ban against updating DOE news and website content during the shutdown. As a consequence, the amplification opportunity wasn’t fully lost, and many heard about SC’s involvement in this seminal scientific discovery.

### Coordinated Exhibit Strategy

The Office of Science has a significant presence at many scientific and technical meetings and historically has supported substantial investments in developing exhibits and disseminating materials to meeting participants. However, given the current budget climate and severe downward pressure on costs associated with conferences and meetings, it is unlikely that SC will continue to mount a large exhibit presence for conferences going forward. This is especially true given that most of these programs lack any kind of formative or evaluative research on whom they reached, with what messages, and with what outcomes.

Having said that, for some of these meetings it is imperative that SC programs have a higher visibility that helps them reach target audiences with program-specific messages. OCPA will work with the program offices to recommend a unified exhibit strategy for the Office of Science, will strategize about what kinds of materials and exhibit approaches are most likely to provide benefit to SC, will suggest evaluation strategies, and will help develop publications and other materials as needed for this purpose.



# Communities of Practice

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**Cultivate a community of practice at DOE, in the field, and among contractors and grantees operating in the SC communication landscape, oriented around a common understanding of Generally Accepted Practices and grounded in communications research literature.**

**Science communication is more than an art form practiced by peppy raconteurs and facile writers.** There is an established *science* of science communication, a recognized discipline complete with a robust literature and prominent scholars and practitioners. Unfortunately, the communications community supported by and attached to the Office of Science is often unaware of or disconnected from that discipline and from the community of practice that has grown up around it.

OCPA has launched a number of modest initiatives to begin cultivating such a community of practice around DOE-sponsored basic research communication. Among initiatives recently put in place:

*Science Writers Group (SWG).* OCPA staff currently plan and host a teleconference every other month for science content generators identified by communications managers at DOE national labs for the purposes of updating us and each other on emerging issues, news and features in development, and successes enjoyed by the labs in communicating research news.

SWG involves regular conference calls and email conversations. Amplification opportunities often arise from those communications. The writers are kept apprised of key developments at Headquarters, so they can amplify where appropriate, and are encouraged to hone their craft. In this regard, the group sometimes functions as an informal academy, with writers passing on ideas and tips and helping one another solve communications challenges. SWG also serves as a vehicle for creating new and cross-cutting content, as well as pushing information about Office of Science announcements and successes out to a wide range of local and regional publics.

*Field PA Tag-up.* OCPA staff currently plan and host a similar monthly teleconference for the DOE employees in the field in a public affairs capacity, which includes communications directors from the 10 SC-stewarded labs to this call.

*Friday Food For Thought.* Every Friday, the OCPA director identifies and summarizes a topical paper in the communications research literature that is both applicable and actionable by our communications colleagues. This analysis is shared with a growing list of communications managers and practitioners across the DOE communications landscape, and we expect to create a permanent home and archive for these “think pieces” in the near future.

## University PIOs

Public information officers (PIOs) at major research universities that receive DOE support are an overlooked resource for developing best practices for public communication of basic research. OCPA is launching an aggressive outreach to this “PIO Network” analogous to those currently managed (to a greater or lesser degree) by the National Science Foundation and the National Institutes of Health to tap this expertise. We will be folding them into our established news portal at EurekAlert! and the proposed news portal at Newswise.

In addition, OCPA plans to launch a more robust series of discussions (via Google chat, Adobe Connect, or in person) with prominent science communication practitioners and scholars for the benefit of the extended DOE communications community.

## Media Training for DOE Staff and Contractors

OCPA will provide training and counsel on request for DOE or contractor staff who request or require it and will occasionally host brown-bag lunches and lectures for the Forrestal and Germantown workforces on science communication. In addition, OCPA plans to develop a series of short, educational videos about public communication challenges in science and technology and make them widely available for the DOE community and others who communicate about basic research.

# Metrics That Matter

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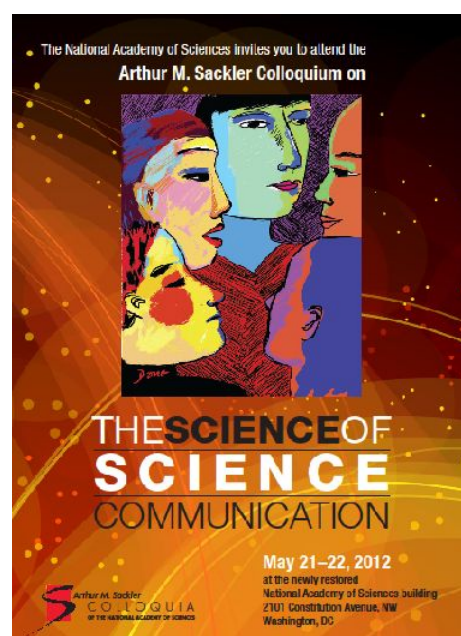
**Develop measurable, meaningful, and actionable evaluation to effectively measure our success in reaching and engaging strategic publics.**

**Especially for a science-performing agency, DOE – like most federal science agencies – informs few of its decisions about communication strategies with robust data.** Most of the available data on the success of communications agency-wide are process measures (how many news releases, how many media hits, how many “likes” on Facebook, how many Twitter followers) rather than outcome measures of awareness, understanding or behavior. While process measures are valuable data in their own right, they should not be confused with metrics that actually evaluate stakeholder satisfaction with DOE or broader public awareness and understanding of DOE-supported basic research. They are at best imprecise proxies for these deeper, more meaningful metrics.

Part of the difficulty of generating useful metrics at DOE is that federal agencies are barred from conducting the kinds of audience research that are the stock and trade of advertising, marketing, and public relations firms, and that are integral to their marketing and communications success. For example, with explicit advance permission or waivers that are difficult to secure, OMB prohibits focus groups, audience surveys, or other audience characterization. There are some workarounds: An agency could construct and seek approval for a survey instrument (usually aimed at “customer satisfaction”), or could work with third parties who may be interested in collecting the same kind or class of information about audience awareness and behavior. OCPA plans to explore both avenues in our push to collect more meaningful data on communications.

## The Science of Science Communication

The sociological and public relations literature related to public communication of science and technology has developed a robust body of knowledge and practice in the past 20 years. The field now hosts two peer-reviewed journals devoted exclusively to communicating science and technology (*Science Communication* and *Public Understanding of Science and Technology*, both published by the Sage journals group in the US and UK, respectively). In addition, some 40 other journals – in science, sociology, and business – regularly publish peer-reviewed articles about science communication. In the decade 2000-2009, more than 3000 publications on public communication of science and



technology were published in the reviewed literature. OCPA regularly reviews these publications, distills and annotates some of them for sharing with colleagues in the DOE research communication enterprise, and facilitates conversations between the authors and public information officers at the national laboratories and research universities.

The National Academy of Sciences has made “science of science communications” one of the key focus areas of NAS and NRC activity, hosting standing-room-only conferences on the topic in 2012 and 2013. A consensus study on future research needs in the area is being developed by the NAS under the auspices of the Roundtable on Public Interfaces of the Life Sciences, on which OCPA is represented by its director.

### Measures of Effective Communication

This research literature, for example, suggests a number of evidence-based approaches to science communication that are not currently part of the communications portfolio at DOE but that OCPA hopes to implement. One in particular involves measuring the level of satisfaction that our stakeholders enjoy with their relationship with the Office of Science. This measures critical issues such as whether our stakeholders feel as if “we’re all in this together,” whether there is a sense of mutual respect and support, and whether they feel we listen well to their concerns and reflect this awareness in our actions. The public relations literature suggests that these measures are much better indicators of stakeholder support and advocacy than traditional measures of awareness and name recognition. A useful starting point will be to measure how stakeholders, media, and other third parties use collateral materials we provide to further amplify SC’s external messages.

When we have collected data on communications, it’s typically been *evaluative* research – that is, designed to figure out how well (or badly) some new initiative did. Just as important and seldom invoked at DOE/SC has been *formative* research – aimed at helping us design communications programs before we launch them, and design them with measurable outcomes that we can capture later in the measurement process.

### Peer Review

Number Six of the Seven DOE Management Principles notes that “We will apply validated standards and rigorous peer review.” Review by professional peers as part of formative and summary evaluation is as critical to effective communications and public affairs as it is to science.

OCPA proposes to conduct regular (approximately every three years) communications audits by peers and experts in science communication and science public affairs, responsible for a 360-degree review of content, audiences, and strategies employed by OCPA in reaching key stakeholders with information about the priorities and research findings of the Office of Science. These will take the form of site visits by a committee of practitioners operating in the public communication of science community.

## **MMAPIg Metrics**

The value of metrics is less to show what a good job one has done than it is to see what a better job one could do. Metrics in communication and public affairs are not measures of *performance* so much as they are measures of *satisfaction*: How would SC's key stakeholders conceptualize or describe their relationship with SC/DOE? Do they feel they're part of the SC enterprise, do they feel they are consulted or engaged? Do they see themselves as part of an SC-led community? Metrics that reflect these concerns are much different from the metrics that federal agencies normally collect about their communications activities.

OCPA benchmarks communications and public affairs metrics using the MMAP framework. Metrics that support our work need to be:

**M -- Measurable.** While it would be interesting to know, for example, with whom the readers of news content on science.energy.gov share information they find on our web site, the constraints on federal agency data collection make it impossible for us to find that out.

**M -- Meaningful.** Metrics need to tell a complete story of audience behavior. For example, we routinely collect information about how long an online user session lasts on our science.energy.gov web pages, but it's not at all clear what these data mean. Could mean that our readership loves what they're reading and spending more time, or it could mean they're frustrated and can't find what they are looking for?

**A -- Actionable.** The data we collect need to be *prescriptive* for things we could do better or *proscriptive* for things that don't work.

**P -- Predictive.** To be useful to OCPA, our metrics need to be validated against future scenarios, not just retrospective analysis. Good metrics should have a fair amount of value as gauges of future audience behavior.

# Staffing and Resources

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**The Office of Communications and Public Affairs invests in relationship building, and the enabling technologies that make maintaining these relationships easier and more productive.**

**While many communications and public affairs offices view the reach of their communications as primary, OCPA focuses on building the strength and quality of relationships with our key stakeholders as the primary work of our staff.** OCPA is one of the smallest of the communications offices in the DOE complex, dwarfed in size even by the public affairs offices of many of the national labs and research universities we support. And yet our plans for growth of personnel are very modest, with the expectation that we will preserve the nimbleness and personal touch that our stakeholders have come to enjoy and expect.

Our current capacity of six full-time staff – three federal, three contract – is sufficient for most of the existing needs of our office, with an additional two positions identified for recruitment to fill gaps in the public affairs portfolio. These staffers come together as matrix teams to support seven product lines: editorial services, media relations, online content, stakeholder and university relations, environmental scanning, special events, and communities of practice. This matrix approach allows for regular assessment of emerging needs and staff resources and enables us to “turn on a dime” to address critical issues as they emerge in these or other areas. However, in order to meet the expanded roles called for in the rest of this strategic plan, OCPA does need to grow in the following areas:

- Content development that stresses the value of basic research investment as a federal good, stories that reflect the management and scientific leadership of the DOE enterprise, cross-cutting stories that draw on multiple national labs, universities, or other “sum-is-greater-than-the-parts” approaches.
- Social media and online content generation
- Digital and visual media, especially short-form video
- Communications literature tracking and analysis
- Tracking grants and initiatives at the program level

Our expectation is that most of this additional capacity will come from career development opportunities for detailees, Intergovernmental Personnel Act assignments, Pathways internships, and Presidential Management Fellows rotations. In this way, OCPA can offer quality mentoring and professional development opportunities to other staff in the broader DOE community, and instill awareness and adoption of communications best practices when these rotating staffers return to their permanent assignments or placements.

In the current market, OCPA also can take advantage of contract resources for writing and product development. However, OCPA should never outsource critical knowledge or skills but should seek to cultivate them in our own staff where these skills can be retained and honed.

### **OCPA Matrix Teams**

OCPA works through a series of matrix teams that report to the Director, forming and re-forming as needed to conduct the business of the office. Standing matrix teams are:

#### Media Relations

Team Lead: Dirk

Members: Natalie, Charles

#### Editorial Services

Team Lead: Charles

Members: Natalie, Dean

#### Stakeholder and University Relations

Team Lead: Kate

Members: Dirk, Natalie

#### Online Content

Team Lead: Dean

Members: Dirk, Charles

#### Environmental Scanning

Team Lead: Natalie

Members: Dean, Kate

#### Special Events

Team Lead: Kate

Members: All Hands

# Appendix: Suggested Readings

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Like our science, communications and public affairs should be based on the most recent empirical research in science communications and its strategies fully grounded in theory and literature. The following articles form the core of our communications and public affairs theory base.

Bauer & Howard (2013). "Public Understanding of Science: compiled bibliography, 1992-2011." *Public Understanding of Science*. 1-273.

Berger, J. and K. L. Milkman (2012). "What Makes Online Content Viral?" *Journal of Marketing Research* 49(2): 192-205.

Besley, J. & Nisbet, M.C. (2013). "How Scientists View the Media, The Public, and the Political Process." *Public Understanding of Science* 22:644-659.

Blackman, D. and A. M. Benson (2012). "Overcoming knowledge stickiness in scientific knowledge transfer." *Public Understanding of Science* 21(5): 573-589.

Borchelt, R., et al. (2013). "The Science of Science Communication II: Summary of a Colloquium." National Academy of Sciences.

Borchelt, R., et al. (2009). "Science communication reconsidered." *Nature Biotechnology* 27(6): 514-518.

Borchelt, R. (2010). "Strategic communication for science and technology." In S. Priest (Ed.), *Encyclopedia of science and technology communication*. (pp. 839-843).

Borchelt, R., et al. (2009) in ScienceWriters. "Characteristics of excellence in science and technology public affairs." *NASW ScienceWriters*. 21-22.

Brewer, P. R. and B. L. Ley (2012). "Whose Science Do You Believe? Explaining Trust in Sources of Scientific Information About the Environment." *Science Communication* 35(1): 115-137.

Dudo, A. (2012). "Toward a Model of Scientists' Public Communication Activity: The Case of Biomedical Researchers." *Science Communication* 35(4): 476-501.

Evans, T. (2010). "We are all in PR now." *British Journalism Review* 21(2): 31-36.

Grunig, J. E. and L. A. Grunig (1991). "Conceptual differences in public relations and marketing: The case of health-care organizations." *Public Relations Review* 17(3): 257-278.

Grunig, J. E. and L. A. Grunig (2001). "Guidelines for Formative and Evaluative Research in Public Affairs." 1-40.

Kahan, Dan M. (2010). "Cultural cognition of scientific consensus." *Journal of Risk Research* 14(2):147-174.



- Kietzmann, J. H., B. S. Silvestre, et al. (2012). "Unpacking the social media phenomenon: towards a research agenda." *Journal of Public Affairs* 12(2): 109-119.
- Krueger, M. (2012). "'Dr. Soundbite': The Making of an Expert Source in Science and Medical Stories." *Science Communication* 34(5): 566-591.
- Maibach, E. et al. (2009). "Global Warming's Six Americas 2009: An Audience Segmentation Analysis. Yale Project on Climate Change and the George Mason University Center for Climate Change Communication."
- Miller, J. et al. (2002). "Science Policy Leaders in the United States." Internal DOE white paper. 1-29.
- Priest, S. H., H. Bonfadelli, et al. (2003). "The 'Trust Gap' hypothesis: Predicting support for biotechnology across national cultures as a function of trust in actors." *Risk Analysis* 23(4): 751-766.
- van der Sanden, M.C.A. and F.J. Meijman. (2012). "A step-by-step approach for science communication practitioners: a design perspective." *Jcom* 11(02) A03.
- Veltri, G. A. (2012). "Microblogging and nanotweets: Nanotechnology on Twitter." *Public Understanding of Science* 22(7): 832-849.
- Weber, M. A. and T. E. Backer (2012). "Science-Based Communication Strategy for a Federal Health Agency." *Science Communication* 35(5): 667-677.
- Ziman, J. (1991). "Public Understanding of Science." *Science, Technology & Human Values* 16(1): 99-105.
- Zorn, T. E., J. Roper, et al. (2012). "Influence in science dialogue: Individual attitude changes as a result of dialogue between laypersons and scientists." *Public Understanding of Science* 21(7): 848-864.