

TASK 1: DELIVERABLE D9 – PLAINS CO₂ REDUCTION (PCOR) PARTNERSHIP (PHASE III) – DECISION SUPPORT SYSTEM WEB SITE REDESIGN

Final Report

Prepared for:

Andrea McNemar

U.S. Department of Energy
National Energy Technology laboratory
3610 Collins Ferry Road
PO Box 880, MS P03D
Morgantown, WV 26507-0880

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Prepared by:

Tera D. Buckley
Wesley D. Peck
Edward N. Steadman
John A. Harju

Energy & Environmental Research Center
University of North Dakota
15 North 23rd Street, Stop 9018
Grand Forks, ND 58202-9018

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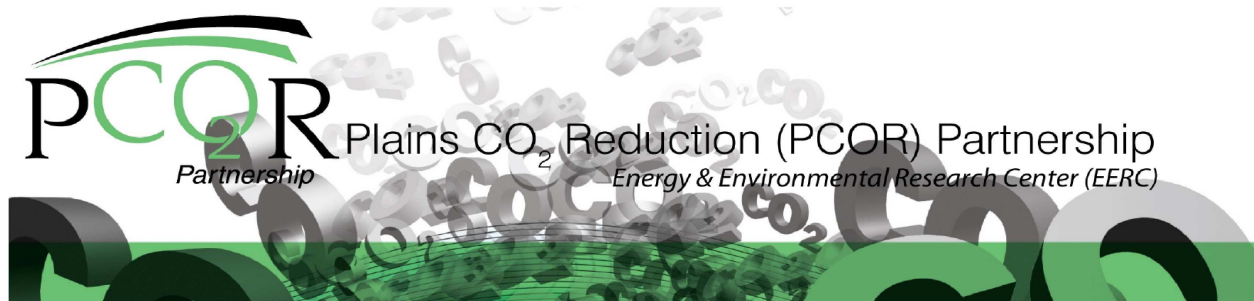
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Tera D. Buckley, Energy & Environmental Research Center
Wesley D. Peck, Energy & Environmental Research Center
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John A. Harju, Energy & Environmental Research Center

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INTRODUCTION

Information developed through the Energy & Environmental Research Center's (EERC's) Plains CO₂ Reduction (PCOR) Partnership is disseminated to the U.S. Department of Energy (DOE) and other partners through the Decision Support System (DSS)—a database-driven, password-protected Web site containing both traditional static pages and an interactive geographic information system (GIS). The original DSS site was launched in 2004 and continued to evolve and improve over the following few years. However, recent growth in data and membership in the PCOR Partnership has made it obvious that the current site is dated and inefficient in disseminating the large volume of information generated through our activities. Therefore, the DSS site was redesigned to achieve the following objectives:

- Increase site traffic
- Improve site functionality through consistent navigation
- Expand access to timely information
- Give the site a uniform and modern appearance

APPROACH

A redesign team was assembled to create the new DSS site. Mr. Wes Peck, EERC Research Scientist, oversaw the team and provided strategic insight. With input from Mr. Peck, Ms. Tera Buckley, EERC Marketing Research Specialist, created the draft framework and content. Programmers from the EERC's Research Information Systems (RIS) Department, including Ms. Jean Vorachek, Ms. Madhavi Marasinghe, and Mr. Brent Lahr, programmed the site. Mr. Earl Battle, EERC Graphics Designer, and Mr. Peck created graphics for the site.

The redesign of the DSS site was conducted in five phases. The implementation of the site redesign began in September 2008 and the new site is expected to be launched in September 2009.

Phase 1 – Evaluate Original DSS Site

In order to assess the use of the original DSS site, Web tracking software was used to determine how often the original DSS site was being used by DOE and PCOR Partnership Partners (EERC users were not considered in the evaluation). It was found that the site was visited approximately 15 times per month. The average user stayed on the site for about 2 minutes and visited an average of three pages. It was also discovered that some pages were not visited at all, while others received more traffic.

Based on these findings, the redesign team evaluated the content with respect to its utility to our members. Some of the content from the original site will be updated and transferred to the new site. In addition, a “wish-list” of new content was created that would allow the site to disseminate information that was not previously distributed to partners or was distributed through other mediums (i.e., hard copy reports, presentations, e-mails).

Phase 2 – Develop a New DSS Site Prototype

Framework and Navigation Development

To accommodate the new content and enhancements to the site, a completely new site framework was required. The redesign team reviewed other well-organized and award-winning Web sites and took various components from other sites to create a unique prototype for the new DSS site. The prototype contained the following major categories in a left-hand navigation that would expand when selected to offer more options:

- Interactive Maps
- Learn about Carbon Management
- Field Validation Tests
- Demonstration Projects
- Regulations
- Carbon Markets
- Products Database

In addition to the flexible left-hand navigation, the top navigation bar would provide quick and easy access to key pages, including the following:

- DSS Home
- About PCOR Partnership
- EERC Contacts
- Partner Directory
- Site Map

Once the framework for the site was agreed upon, an EERC graphics artist created a home page image and secondary page designs. Content for the site was created by EERC education and outreach professionals with input from PCOR Partnership technical researchers.

Site Improvements

Home Page

The home page was completely redesigned, as illustrated in Figure 1. The left-hand navigation (Item 1) was organized and condensed into expandable menus and a top navigation banner. New items (Item 2) were transferred to a database-driven space that allows the site maintenance team to automatically update the site without the need for custom programming. The page size was widened (Item 3) to allow more content on the page without scrolling down. A news ticker (Item 4) was added to the home page that automatically refreshes several times a day to keep partners up to date on industry news.

Secondary Pages

The functionality of the site was improved by making each secondary page accessible through navigation that remains consistent on every page. An arrow marks where the user is on each page, which allows for smooth navigation between pages. Each page lists a PCOR Partnership representative who can be reached if the user needs additional information on a specific topic area. The overall look of the site was also improved by giving it a consistent, modern look, enhanced with images of PCOR Partnership-related activities.

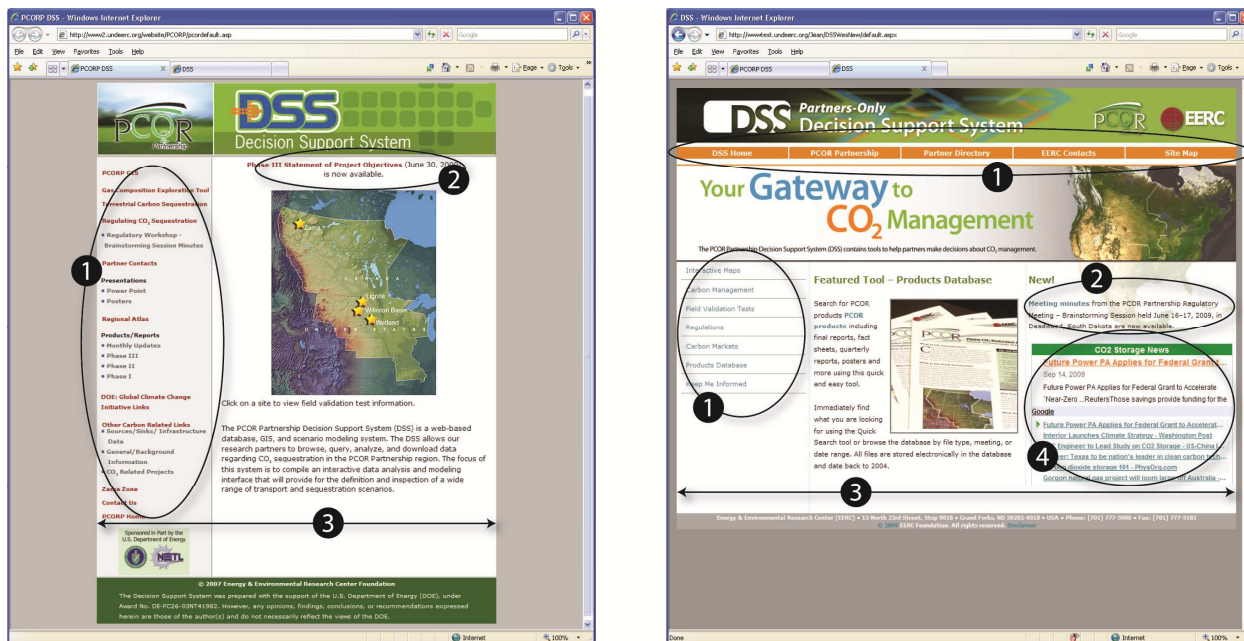


Figure 1. Screen captures comparing the original and new DSS home pages.

The following sections describe how the content and functionality of the site was improved.

Carbon Management – The Carbon Management section is new and provides PCOR partners with background information on topic areas such as CO₂ sources, CO₂ capture, geologic storage, terrestrial storage, and monitoring, verification, and accounting (MVA). An alphabetized Glossary of Terms was added that provides definitions to technical terms. An interactive feature in this section includes a tree diagram listing various types of CO₂ capture technologies (Figure 2). Once a technology is selected, the user is presented with a description of the technology and a list of companies offering that technology. In many cases, Web links are provided to direct the user to more information.



Figure 2. CO₂ capture technologies screen capture.

Field Validation Tests – This section incorporates some terrestrial carbon storage material from the earlier version of the Web site and incorporates the existing Zama Zone database. New information on all four field validation tests (Zama, Lignite, Northwest McGregor, and Terrestrial) has been added to this section and will be updated regularly as these efforts progress (Figure 3).



Figure 3. Field validation tests screen capture.

Regulations – Like the original Regulations section, the updated section lists information about the current regulatory framework including capture and separation, CO₂ transport, underground injection, and long-term management and liability for geologic storage. It also provides updates to federal, state, and provincial regulations with improved access to this information and streamlined content. Regional Initiatives was added as a new page (Figure 4).

The screenshot displays the 'Partners-Only Decision Support System' (DSS) website. The header includes the DSS logo, the title 'Partners-Only Decision Support System', and logos for PCOR Partnership and EERC. A navigation bar contains links: DSS Home, PCOR Partnership, Partner Directory, EERC Contacts, and Site Map. The left sidebar lists various resources: Interactive Maps, Carbon Management, Field Validation Tests, Regulations (highlighted), Current Regulatory Framework, Downloadable Resources, Federal Legislation, Regional Initiatives (highlighted with a red arrow), State/Provincial Regulations, Carbon Markets, Products Database, and Keep Me Informed. The main content area is titled 'Regional Initiatives' and contains a paragraph about three regional GHG initiatives. Below this are two maps of North America: the Western Climate Initiative (WCI) map showing participating states in blue and observer states in green, and the Regional Greenhouse Gas Initiative (RGGI) map showing participating states in blue and observer states in green. Each map has an 'Enlarge image.' link. To the right of the WCI map is a detailed description of the Western Climate Initiative (WCI), and to the right of the RGGI map is a detailed description of the Regional Greenhouse Gas Initiative (RGGI). At the bottom left, there is a contact box for Lisa Botnen, Research Scientist, with her phone number (701) 777-5144 and email lbotnen@undeerc.org.

Regional Initiatives

Three regional greenhouse gas (GHG) initiatives are in place to reduce CO₂ emissions through the adoption of cap-and-trade programs and the implementation of complementary processes focused on topics such as energy efficiency, low-carbon transportation fuels, and renewable electricity production. These initiatives include 23 states as full members, nine states as observers, and six of the ten Canadian provinces - four as full members and two as observers.

Western Climate Initiative (WCI) – With a goal to establish a regional emission target and market-based system, such as a cap-and-trade program, covering multieconomic sectors, WCI hopes to achieve an economywide GHG emission target of 15% below 2005 levels by 2020. Beginning in 2012, the program will cover emissions from electricity generation and large (>27,500 tons per year of CO₂ equivalent) industrial and commercial sources. This program would be extended to emissions from transportation and other residential, commercial, and industrial fuel use in 2015.

Mandatory reporting is proposed in early 2011 for calendar year 2010 for facilities emitting over 11,000 tons per year of CO₂ equivalent. Third-party verification of reporting data would be required for facilities over the 27,500-ton-per-year threshold. Like the Midwest Greenhouse Gas Reduction Accord, WCI will also address other GHGs as defined by the United Nations Framework Convention on Climate Change such as methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

Regional Greenhouse Gas Initiative (RGGI) – RGGI has a goal of implementing the first cap-and-trade program for CO₂ to establish a CO₂ emission cap from power plants and allow sources to trade emission allowances. RGGI has a mandate to initially cap CO₂ emissions at 2009 levels and then to reduce emissions by 10% by 2019.

For more information on CO₂ regulations, contact:

Lisa Botnen
Research Scientist
(701) 777-5144
lbotnen@undeerc.org

Figure 4. Regional initiatives screen capture.

Carbon Markets – Carbon Markets is a completely new section that describes the concept of carbon markets and provides quick links to trading programs and offset providers (Figure 5).



Figure 5. Offset providers screen capture.

Products Database – On the original DSS site, PCOR Partnership products such as topical reports, progress reports, monthly reports, Atlas, and fact sheets were listed by project phase. Because the quantity of PCOR Partnership products has grown significantly as the program has evolved, a database-driven Web interface was created to allow users to quickly search for products. The database structure allows the PCOR Partnership administrative team to upload products to the database and provides a mechanism for them to store and retrieve products for their own use. The database also contains more items that were not previously available on the DSS site, including additional meeting presentations, more posters, and abstracts. The Advanced Search tool allows users to search by words, date, file type, or by meeting. The listing of products derived from a search contains links directly to the electronic file stored in the database. The Products Database main search page is shown in Figure 6.

DSS Partners-Only Decision Support System

Navigation: DSS Home | PCOR Partnership | Partner Directory | EERC Contacts | Site Map

Products Database

Quick Search **Quick Search**

Advanced Search (search one or more options) **Advanced Search**

With all of the words:

With the exact words:

With any of the words:

Without the words:

File Type (limit search by checking all that apply)

☐ Abstract ☐ Fact Sheet ☐ News Article ☐ Progress Report

☐ Atlas ☐ Final Report ☐ Poster ☐ Quarterly Technical Progress Report

☐ External Publication ☐ Monthly Report ☐ Presentation ☐ Topical Report

Date (select one date search option)

☒ Search products created within:

☐ Search by date range After: Before:

Advanced Search

Browse by Meeting **Browse All Files**

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Figure 6. Products database main search page screen capture.

Partner Directory – Contact information for PCOR Partnership partners is stored in an internal database. On the original site, the database was used to populate contact information listed on a static page. As the number of members grew, the static page became difficult to use. The new Partner Directory (Figure 7) uses the same database to populate the information, but the interface was improved by listing partners by last name or company. This format allows users to jump to areas in the alphabet to quickly get to the information they are looking for.

DSS Partners-Only Decision Support System

Navigation: [DSS Home](#) | [PCOR Partnership](#) | [Partner Directory](#) | [EERC Contacts](#) | [Site Map](#)

Sidebar Links: [Interactive Maps](#), [Carbon Management](#), [Field Validation Tests](#), [Regulations](#), [Carbon Markets](#), [Products Database](#), [Keep Me Informed](#)

Partner Directory

Sort by: [Sort by Last Name](#) | [Sort by Company](#)

Jump to: [A](#) | [B](#) | [C](#) | [D](#) | [E](#) | [F](#) | [G](#) | [H](#) | [I](#) | [J](#) | [K](#) | [L](#) | [M](#) | [N](#) | [O](#) | [P](#) | [Q](#) | [R](#) | [S](#) | [T](#) | [U](#) | [V](#) | [W](#) | [X](#) | [Y](#) | [Z](#)

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<p>Mr. Kevin Adams Technical Operations Manager Abengoa Bioenergy New Technology, Inc. 1400 Elbridge Payne Road, Suite 212 Chesterfield, MO 63017 Phone: (636) 368-6539 Fax: (636) 536-6175 kevin.adams@bioenergy.abengoa.com</p>	<p>Mr. Al Anderson Vice President Tesoro Refinery (Mandan) 900 Old Red Trail Northeast Mandan, ND 58554-1589 Phone: (701) 667-2402 Fax: (701) 667-2419 aanderson@tesoropetroleum.com</p>
<p>Mr. Dwight Anderson Project Development Manager Minnesota Power 30 West Superior Street Duluth, MN 55802-2093 Phone: (218) 722-5642, ext. 3539 Fax: (218) 723-3915 danderson@mnpower.com</p>	

B top

Dr. Stefan Bachu	Dr. Pascal Badiou
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Footer: To update your contact information, contact:
 Katherine Anagnost, Research Specialist/Project Manager
 (701) 777-5229
kanagnost@undeerc.org

Figure 7. Partner directory screen capture.

EERC Contacts – The original site listed EERC contacts by project phase and task. The revised EERC contacts page (Figure 8) lists current contact people for specific areas of expertise.

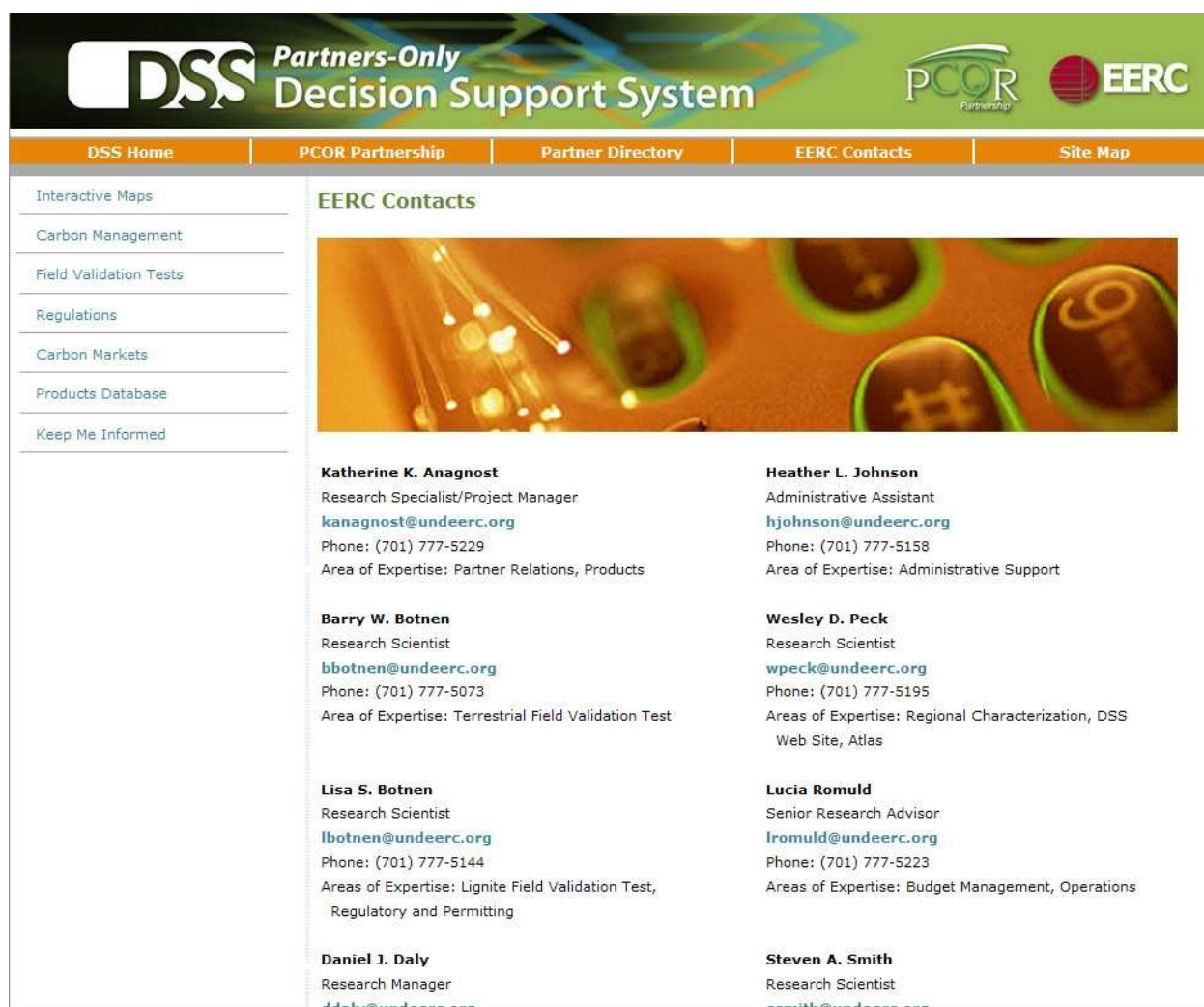


Figure 8. EERC contacts screen capture.

Phase 3 – Perform an Internal Review of the Prototype

Once a working prototype of the new DSS site was created, it was sent out for review by PCOR Partnership technical researchers and the management team. Reviewers were asked to consider the usability, look and, most importantly, content for the site. Several comments were received that noted progress made to efforts since the prototype was created. These changes reflect the importance for the site to be continually maintained.

Phase 4 – Revise Prototype Based on Internal Review

The only major revision to the prototype was the addition of a new section called Keep Me Informed (Figure 9). There was a need for a page to display timely information such as meeting notices, announcement of completed reports, and industry news. Although this information could be stored elsewhere on the site (i.e., Products Database), there needed to be a page to draw attention to new and time-sensitive information. A prototype for this page has been created, and the page is under construction.

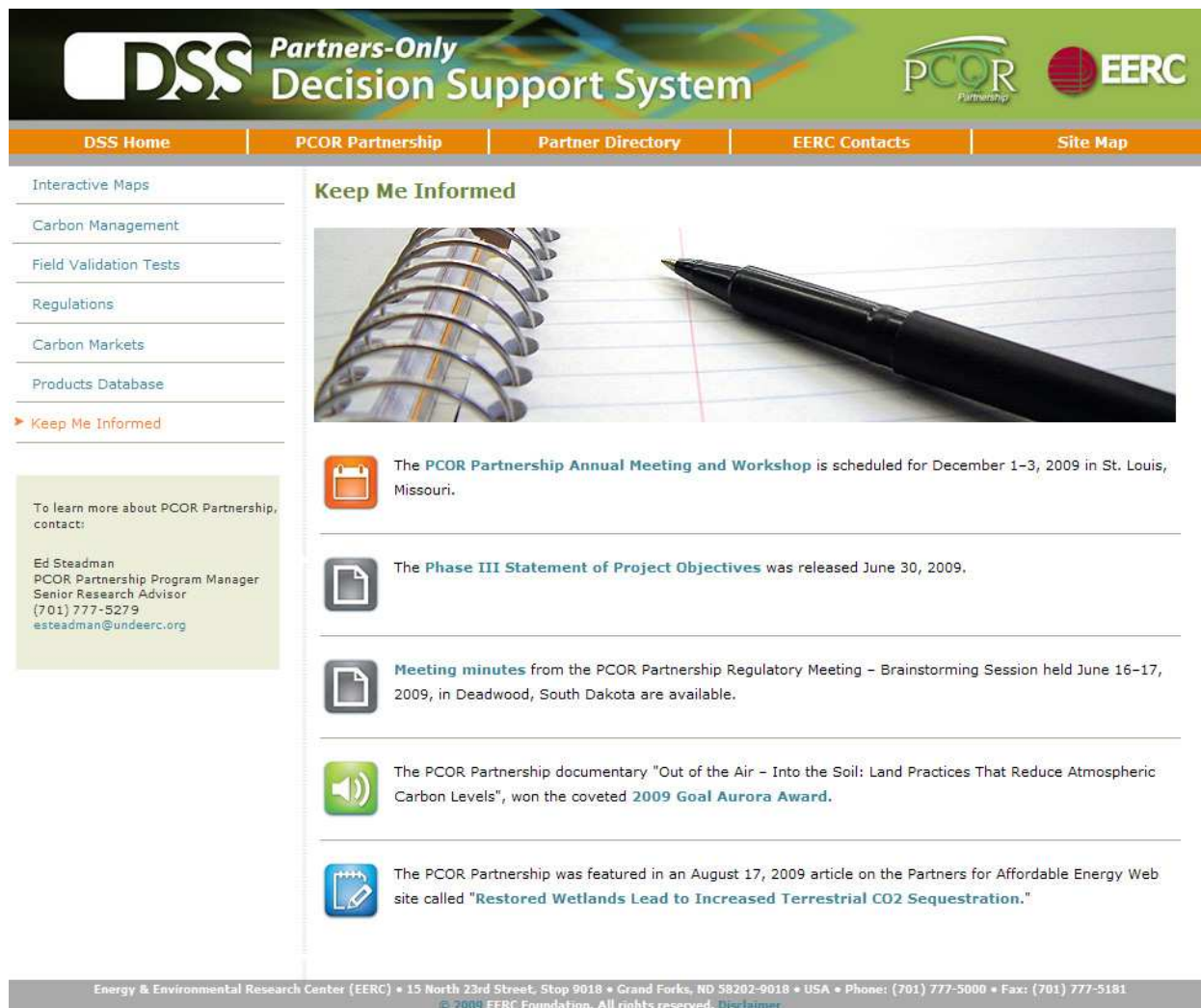


Figure 9. Keep me informed screen capture.

Phase 5 – Launch and Maintain Site

The new site is being reviewed internally and is expected to go live in September 2009. A DSS Site Manager has been dedicated to maintaining the site and will obtain new site content through the following mechanisms:

- Review monthly, quarterly progress, and topical reports
- Participate in PCOR Partnership meetings
- Conduct periodic status update meetings with the management team and task leaders
- Conduct annual formal review meetings with the management team and task leaders

All pages will be continuously updated to ensure content remains up to date. Revisions to the site's databases will be performed weekly by the DSS Site Manager, as new content is acquired. Revisions to technical content will be programmed by the EERC's RIS Department and then approved by PCOR Partnership technical staff and the management team before going live.

FUTURE WORK

In addition to keeping the existing content current, the following new sections will be added in the next 6 months.

Multimedia Gallery – Several high-quality photographs and illustrations have been created through past PCOR Partnership activities. A searchable Image Library will be created to house these images. Users will be able to access these images and download them for use in documents, presentations, or promotional materials. Several image sizes will be available to download. In addition to the Image Library, news stories, PCOR Partnership facts, and short videos will also be contained in the Multimedia Gallery.

Decision Project Reporting System (DPRS) – This section will present information specific to the demonstration projects and will be maintained, utilized, and reported to DOE and partners. The DPRS content will likely contain the following main categories:

- Background Information
- Baseline Characterization Data
- Regulations and Permitting
- CO₂ Capture and Transportation
- Monitoring, Verification, and Accounting
- Injection and Operations
- Products