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Topic – Managing communication and credibility

**DEVELOPING AND IMPLEMENTING WEB MANAGEMENT AND GOVERNANCE FOR
THE ENERGY INFORMATION ADMINISTRATION**

Submitted by Energy Information Administration, United States of America¹

I. INTRODUCTION

1. This paper describes the process underway and the progress made by the U.S. Energy Information Administration (EIA) to improve corporate-level web management and governance at the Agency. Activities include:

- Conducting a baseline assessment to identify the current state of the Agency’s public website, www.eia.doe.gov, including problems that are related web management and governance.
- Establishing a collective, future “user experience” vision for the website.
- Implementing necessary organizational structures, roles, processes, and skill sets with the Agency’s National Energy Information Center.
- Introducing user-centered and research-based web design and development methods to allow the Agency to make better informed choices as to what should be on its website and how information should be presented.

**II. THE “STATE OF THE WEB” AT THE ENERGY INFORMATION
ADMINISTRATION**

A. Background

2. EIA is in the beginning stages of developing an agency-wide web management or governance structure and introducing a more coordinated, corporate and strategic approach to web product development and delivery. Established in July 1995, EIA’s public website, www.eia.doe.gov, has become the public face of the Agency, and its information, data, analysis, and services have informed policy and programmatic decisions at all levels in regards to energy and its interaction with the economy and the environment. The website is the Agency’s primary communication channel for and serves as its world-wide energy information point of contact for:

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- Federal, State, and local governments
- The academic and research communities
- Businesses and industry
- Foreign governments and international organizations
- The news media
- Financial institutions
- The general public

III. A Tradition of Excellence

3. From January – December 2008, the website logged 30.4 million visitor sessions, averaging 2.5 million visits per month. EIA has forged a tradition of excellence for www.eia.doe.gov thanks to solid commitment and hard work throughout the agency, which consists of approximately 375 Federal employees and an annual budget in Fiscal Year 2009 of \$110.6 million. The website consists of approximately 500K files of all types that support 1,300 publications and products, 47 email subscription lists, and a growing number of RSS feeds.



EIA Homepage: 2009

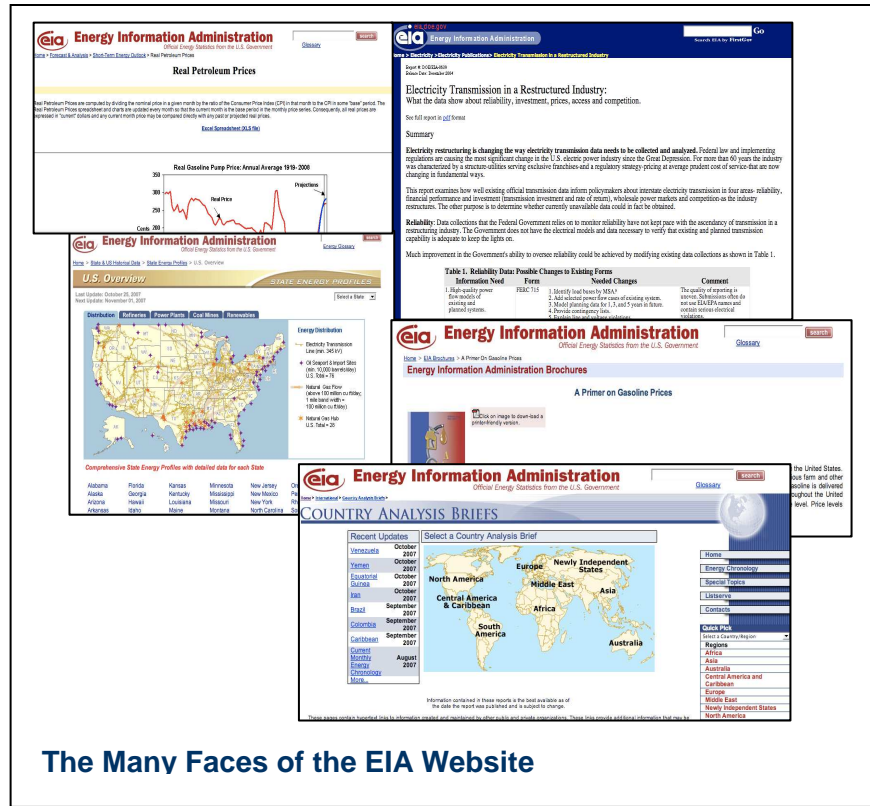
4. Other key indicators of the site's success, circa 2008, in serving our customers include:
- 279,000 total subscriptions to EIA email update lists.
 - Major search engines (like Google and MSN) refer to EIA an average of 600K visitors a month searching for energy topics.
 - 4640 websites linking to www.eia.doe.gov.
 - Search engine rankings of EIA on Google indicate very strong performance on relevant key topics.
 - 90% of our customers say they are satisfied or very satisfied with the quality of the information on our website.
 - 71% said they found what they were looking for on our site.
 - The top three words customers used to describe EIA are informative, objective, and expert.

B. Opportunities for Improvement

5. Despite this solid track record, the EIA website was found to be in need of improvement in a variety of areas. According to the findings of the "EIA and the Internet" Strategic Planning Study Group, convened by the Agency in the summer of 2006, the website suffered from a number of shortcomings that may be affecting the Agency's ability to achieve its mission, including:

- Lack of a standard set of product lines across program offices, and a lack of standards and coordination across existing products.
- Insufficient scrutiny or selective judgment regarding the volume of content that is posted on the site. As a result, the site suffers from too much information that is poorly organized and coordinated. This can result in a user experience that is akin to "drinking from a fire hose."
- Lack of consistency in: look and feel (both at the site and product-level), content quality assurance, product branding and marketing, and presentation of data across program offices.

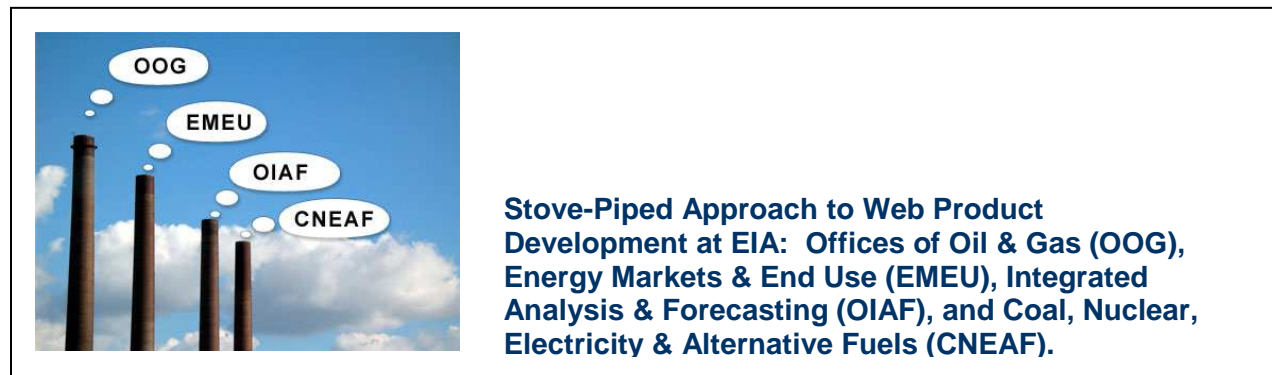
- A site that focuses heavily on providing data, perhaps at the expense of providing the synthesis, context and interpretation that foster the higher-level goals of knowledge, understanding and insight. The existing interpretative content is often buried within the site and not optimized for the web.
- The site homepage needed to do a better job in highlighting announcements, hot topics, special features, and other new and timely information, and in serving as a portal into different dimensions of available information (topic, type of product or document, time, geography, audience type, and task).



- Too many basic inquiries from customers; website did not adequately facilitate self-service.
- Content too often reflects an insider, industry or expert perspective, thus under serving uninitiated or novice users.
- Print and paper-based modes of presentation predominate the website; agency is not thinking “web-first” for the structure, format and presentation of its information (examples = tables, charts).
- Site suffered from a lack of focus or coordinated corporate “message.” Tries to be all things to all users. Key audiences were not identified and prioritized, and these choices were reflected on the site.
- Lack of detailed research and analysis on site customers and their needs (includes both qualitative and quantitative data). Customer research not being coordinated and shared across the agency. Detailed usage statistics were not available to provide performance-related data on particular products.
- Lack of unified, future vision or clear blueprint for a corporate approach to presenting data on the web.
- Data and databases are often difficult to access and use online due to a lack of integration. This prevents the Agency from exploring opportunities to expand access to and usage of data online, and make it usable to multiple layers of needs and audiences.

6. Many of these shortcomings have their origins in the ad hoc and informal business processes and management and production guidelines that have been used to operate the site since its inception. While this approach may have enabled the website to function adequately in the past, EIA’s web presence has grown exponentially to such an extent that a more formal, corporate, deliberate and strategic approach is required. The EIA website has evolved in a largely decentralized organizational environment where each of the Agency’s four main program Offices develop and maintain their own web product lines both independent of each other, and with little or no corporate web or communications management. Largely missing from EIA’s web operations, until just recently, were established business process standards, governance, strategic planning, and the evaluation of return on investment—activities that are the

foundation of most other mature product development processes. EIA also lacks a strategic web vision and plan that are aligned with EIA's mission and business objectives, as well as customer needs.



IV. IDENTIFYING AND INSTITUTIONALIZING AGENCY-WIDE WEB & COMMUNICATIONS LEADERSHIP

C. Phased Evolution of the National Energy Information Center

7. In April 2006, EIA institutionalized corporate web governance at the executive level with the hiring of a new Director for the Agency's National Energy Information Center (NEIC), the Office that at the time was responsible primarily for managing the Agency's customer contact center (Information Center Operations Division) and print publications (Publications Division). Prior to 2006, the organizational structure and staffing of NEIC had remained largely unchanged since the agency was founded in 1977. This despite the fact that with the launch of its website in 1995, the number of print publications had dramatically decreased from more than 80 in 2000, to just five publications in 2005, and now three in 2009. Although the majority of EIA's surveys, data, and other products were moved on-line, the structure, staffing and focus of NEIC largely did not evolve with them. Instead, web content and application development emerged independently and separately within each of the Agency's four main program Offices. And the resource savings realized from the scaling back of the Agency's print operations were not re-invested in NEIC, so that it could become a more web-oriented unit.

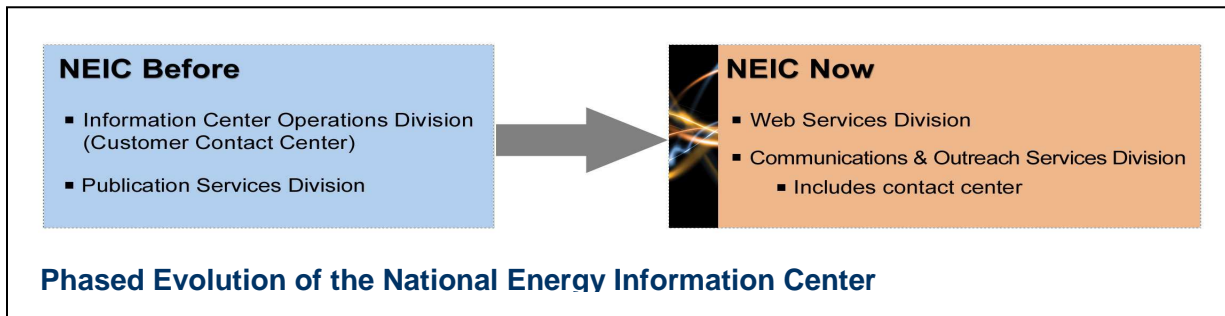
D. Establishing Corporate Web Responsibilities

8. With a new Office Director in place, NEIC was given explicit responsibility for maintaining the content and design of the EIA home page, developing and executing web publishing policies and standards, and leading EIA-wide (corporate) web efforts, largely through a newly-formed Web Steering Committee comprised of representatives from all eight (support and program) Offices within EIA. The first of two successive re-organizations within NEIC was initiated in 2006 so that the Office could assume its new corporate web operations and management role. This reorganization phased out the old Publications Division and, in its place, created a new Web Services Division led by a Web Services Division Director position that was filled through an external vacancy and hiring process. Office retirements, a raising of the Office's hiring ceiling, re-programming and training of existing staff, and additional contractor support allowed several other key web positions in NEIC to be created and filled over the past three years:

- Web Editor in Chief
- Web Content Manager (2)
- Web Project Manager (2)
- User Experience Advocate
- Multimedia Specialist

9. NEIC's Web Services Division now works closely with the agency's program Offices, through the EIA Web Steering Committee, to manage and coordinate all aspects of the site's development and growth. To extend web expertise and build in-house capacity throughout the Agency, NEIC also introduced a monthly Web Seminar Series to provide an opportunity for individuals across the organization to learn about the latest web communication, technologies, and development and design methodologies, as well as to share best practices and lessons learned. Presenters include web "thought leaders" from the private sector and other federal agencies, along with EIA's own in-house web experts. A sampling of past topics includes:

- What Insights Can We Draw From How Policy-Makers, Journalists, and Energy Producers Engage With EIA Online?
- Search Engine Optimization
- Meet EIA's New Personas
- Web Project Management That Works: Lessons Learned from USDA's Economic Research Service
- Taxonomy & Metadata



E. The Need for a Corporate Approach to Communications, Outreach and Marketing

10. Integrally related to establishing a corporate approach to web management and operations is that of following a similar approach for an organization's communications, outreach and marketing efforts. In most U.S. government organizations, corporate web governance (at least from a content and communications perspective) resides within an agency's central Communications or Public Affairs Office. However, in EIA's case, many traditional communications and public affairs functions were poorly structured and resourced within NEIC, or simply missing altogether. Until just recently, for example, the Agency's Press Office function was covered by a part-time position located under the customer contact center, and the ability of the Office to provide editorial services to EIA Offices was largely missing. Among other effects, this lack of a deliberate, structured, and focused approach to corporate communications has meant that EIA has:

- Little official or coordinated strategy for external or internal (employee) communications.
- A limited ability to implement common & unified communications initiatives.
- Lost opportunities at critical junctures to make an impact.

F. Introducing Communications and Outreach Services

11. To introduce communications, outreach and marketing as a more corporate function, a second NEIC reorganization was put into operation in late 2008 with the creation of a Communications and Outreach Services Division. This new Division encompasses the customer contact center, media relations, external communications & marketing, web editorial operations and oversight, customer research & analysis, editorial services, graphic design services, event planning, and internal (employee)

communications. While the hiring process is still underway, the Division will be headed by a Communications and Outreach Services Director who will be responsible for:

- Serving as Agency authority on communications, marketing, outreach, and customer relationship management and directing an enterprise-wide communications and customer relationship management program.
- Serving as the Agency Communications Officer who represents EIA in communications with U.S. Department of Energy's Office of Public Affairs, other government agencies, the news media, and other external customers.
- Advising the NEIC Director and other EIA senior management on all aspects of the EIA communications program including devising best uses for the Communications and Outreach Services Division Staff, materials and resources.
- Establishing priorities and allocating resources for Agency communications services to meet Agency goals as determined in consultation with the NEIC Office Director, NEIC Web Services Division Director, Administrator, and Deputy Administrator.

V. ALIGNING THE EIA WEBSITE WITH USER NEEDS

G. User-Centered, Research-Based Design

12. EIA has a long history of measuring customer satisfaction, beginning in the early 1990's. Building on this tradition, NEIC has instituted a much more extensive, systematic and integrated set of user-centered and research-based web design and development approaches that allow the Agency to make better informed choices as to what should be on its website and how information should be presented. Most fundamentally, this means that decisions about www.eia.doe.gov (architecture, navigation, terminology, graphical interface, etc.) should be based on data, not opinions, and on users' needs. More and more, the site is developed with continuous user input and tested with users.

13. Research-based, user-centered activities that recently have been introduced at EIA include:

- Defining a "user experience" vision for the EIA website.
- Conducting interviews with EIA staff and external (customer) interviews.
- Analyzing contact center call logs and emails.
- Conducting web metrics (NetInsight) and search log analysis.
- Implementing product-specific customer satisfaction surveys.
- Conducting formal audience analysis and persona development.
- Performing card sorting testing and analysis to inform information architecture choices.
- Conducting one-on-one usability testing.

14. The following sections provide a more in-depth look at a few of these user-centered and research-based web design and development approaches.

H. Establishing a "User Experience" Vision for EIA

15. The organizations with the most successful websites share something: a solid vision for the future. According to User Interface Engineering President Jared Spool, "You can think of a vision as a stake in the sand on the horizon. You can't get there today, but you can clearly see it in the distance. You can then see how every step you take is either bringing you towards the vision or taking you away." Often these visions are for experiences five or ten years in the future. In addition to identifying opportunities for improvement, the "EIA and the Internet" Strategic Planning Study Group, also established the following forward-thinking "user experience" vision for the Agency website:

EIA’s public website is tailored specifically to meet the core needs of the agency’s most important customers, with users relying on the site to provide knowledge, understanding and insight on important energy topics and issues. The site delivers just the information customers need, when they need it, in the right amount, and through the appropriate communication channel. It serves the needs of both novice and expert users equally well. Users also find the content, presentation, format and structure of EIA’s web products to be consistently high quality and easy to use. The site allows users to easily locate all products that are available across multiple dimensions, including topic, type of document or product, time, geography, and other key variables or facets that are found to be important to them. And users regularly benefit from the agency’s pro-active efforts to enrich site content and expand reach through the strategic use of new technologies and communications tools.

“User Experience” Vision for www.eia.doe.gov

I. Developing User Personas

16. EIA is among a growing number of U.S. Federal agencies that have created “user” or “audience” personas to guide the development of their public websites. The goal of personas is to help ensure that the Agency’s online services are tailored specifically to meet the core needs of its most important user groups and are to be used to guide decisions about product features, navigation, interactions, and even visual design. Web product developers throughout EIA are encouraged to use these personas to help them focus on a particular audience, define that audience’s needs, design appropriate features, and test key components of the feature. Our personas are based on in-depth interviews conducted with representatives from six EIA key target audience groups as determined recently through EIA’s ongoing Web Strategy initiative.

Ari Schreiber CONGRESSIONAL STAFFER

- Staff Director for the Subcommittee on Energy and Mineral Resources (House Committee on Natural Resources)
- Has deep knowledge on energy policy legislation and issues
- Focuses on providing valued information for the policy and legislative decision-making process
- Relies on information that is highly trustworthy
- Gets a contact if unable to locate information online

Key Tasks

- Coordinates the House Committee on Natural Resources on energy policy strategy to help them make informed decisions
- Needs to quickly find information to shape and incorporate into policy initiatives. Prepares and delivers key information for speeches
- Manages staff team of five. Expects them to research and draft memos and short bills. Needs need to be basic enough to be understood by non-experts
- Organizes committee hearings

Background

From a young age, Ari was fascinated by the outdoors. For that reason, pursuing an Environmental Studies degree seemed like a natural fit for him in college. Upon graduating, he worked as an intern for the National Energy Institute before taking a job at Dow Chemical in Pennsylvania working on State government relations. A few years later he left the company to get his Master's Degree at American University's Congressional University. With his degree in hand, Ari took a job at EIA to become a staff member of the House Committee on Natural Resources. He believes this job allows him to make an impact on our environment through energy and legislation he looks after.

Ari needs information to write policy statements and speeches on tight schedules. He likes to use visual data (maps and graphs) and one pager to communicate with busy Congressional members.

Most of the information Ari regularly needs is new available online. He finds their relevance and summary tables useful, and would like to be able to compare State level information, having accurate, timely, and credible information is vital. Ari needs quick access to information very quickly, but if he can't find what he's looking for, he'll pick up the phone to speak to a contact within the appropriate organization.

When searching for information to prepare these briefs and policy recommendations, he'll consult a number of web sites including: Energy Information Administration, Environmental Protection Agency, National Petroleum Council, Congressional Research Service, and the Federal Energy Regulatory Commission. Ari's top tips include: general background on the energy sector, National Oil Association of America, Association of Oil Producers, and the National Petroleum Council's website.

In addition to his typical job responsibilities, Ari is often found organizing committee hearings and attending Hill hearings. In his downtime, he actively keeps abreast of the latest news in the energy sector.

On a personal note, Ari loves the outdoors and is a sports enthusiast. He and his wife are training for this year's Marine Corps marathon. Ari also loves to read non-fiction, especially biographies and accounts of the Civil War.

Attributes

- 30 years old
- Married with two kids
- Lives in Washington D.C.
- B.A. in Environmental Studies from Middlebury College, M.A. in Government concentration in American Government from Georgetown University
- Very busy
- Wants to save time throughout the day to keep up with the energy sector and what people are saying
- Smells all day long

Favorite sites:

- www.eia.com
- www.eia.gov
- www.eia.doe.gov
- www.eia.gov
- www.dodgsonreport.com
- www.enr.com

Data Hound ROBOT

- Serves as a software application that runs automated tasks, known as scraping, over the internet to collect information
- Retrieves energy supply and inventory data
- Is triggered by the exact scheduled time of release of key information

Key Tasks

- Searches and recovers specific energy related data from specific sites
- Parses and repackages data in text file format, or occasionally as XML. This is all done within 20 milliseconds of the data being posted online by the data provider

Background

Data Hound is a computer robot or data bot, not to be confused with a spider, though both software applications are used for data retrieval. Whereas spiders explore many links, robots target specific data and sites. Data Hound performs simple and repetitive tasks at speeds measured to microseconds, infinitely faster than human performance.

Data Hound was designed to obtain and redistribute energy supply and price data to traders, brokers, and journalists before the company's competitors obtain the same data. There are a handful of data sites that provide these types of data, but Data Hound prefers to get them from Government sites, as they tend to be highly reliable.

Because Data Hound is automated, the data provider's report format needs to be consistent. He can most easily scrape data that are presented in consistent columns and in consistent order (e.g. CSV and XML files with row columns). Data Hound's manager needs to know in advance if the release time for a specific report will change (for example, because of a Federal holiday). In those cases, he'll help out a day later.

Once Data Hound has retrieved the necessary data, they are repackaged as headlines displaying net changes and this week's numbers. The headlines are called "news headlines" and are short, approximately 60 character phrases. Depending on the time, the packaged data might become a Times Square headline in New York City, or might appear on webboards and news sites. Other ways the data are used:

- Financial market traders are made automatically using the scraped data
- Within five minutes of the release, reporters call their analysts to get their thoughts and write an instant news/intelligence story
- Within the next 10 minutes, the company publishes standard news stories written by journalists. Fifteen minutes after the release, the entire process is complete

Three people who benefit directly from Data Hound's work include large financial institutions (e.g., Merrill Lynch) that are interested in U.S. aggregate information such as stocks for the whole country. Journalists, brokers, or energy traders who want more specific or regional data (e.g., Gulf Coast crude stocks) will also use the information in their work.

In the future, Data Hound's manager would like to have access to the data on a password protected site, or participate in an industry agreement and opt when they could access the information ahead of the public. Such an early release would require that the data not be released by Data Hound's manager until the information is made publicly available.

Attributes

- 2 years old
- Robot of Bloomberg, Information Services, Division
- Located in Newark, NJ
- Uses the Web in very short spurts, always at the same time each week
- Favorite sites:
 - www.eia.gov (Motor Gasoline on Wednesdays, Weekly Natural Gas Underground Storage on Thursdays)
 - www.enr.com
 - www.eia.doe.gov
 - www.eia.gov
 - www.phillipssecurities.com
 - www.enr.com
 - www.enr.com

EIA User Personas: Congressional Staffer & Robot

J. Measuring Customer Satisfaction

17. EIA has conducted at least one agency-wide customer survey each year for the past 14 years, the earlier ones being on the telephone or on paper and the more recent ones on the web. The Agency asks about who our customers are, how often they come to our website, what they are looking for, whether

they found it or not, how satisfied they are with the quality of our information, and other aspects of our site and data delivery. EIA has used the customer survey results to benchmark changes in customers and perceptions over time, to identify needed improvements to our content and navigation, and to understand different audience groups. In addition to conducting agency-wide surveys, EIA also has done focused surveys of our Kid's Page and of several specific products. In the future EIA plans to make more use of targeted one- or two-question requests for feedback that gather customer satisfaction information on specific pages or products. EIA is actively concerned with finding out who is using our content, whether it's written at the appropriate level, and whether we need to make changes to better serve our customers.

K. Conducting Usability Testing

18. One-on-one user testing offers EIA web product developers a chance to see real users moving through content and applications while articulating the choices they are making. These user experiences are then used to refine the site's architectural choices (placement of labels and navigation, for example) and content choices (what to leave in, what to take out and how to better target information to achieve tasks). EIA has solicited potential participants for usability research and other types of product evaluations through the Agency's email newsletters, an advertisement placed on the www.eia.doe.gov homepage, as well as other channels.

L. Implementing Web Analytics Reporting Software

19. Since the late 1990's, EIA measured its website traffic using a very basic tool, developed and programmed by in-house staff, that had only a small number of features and capabilities. This was early in the web metrics field and the commercial off-the-shelf products available at the time were limited, especially when it came to processing site log data from more than one server. In 2007, EIA implemented state-of-the-art web analytics software (NetInsight) that allows the Agency to better benchmark and gauge the success of its online investments and employ current best practices regarding website and product evaluation.

20. The new commercial off-the-shelf software package tracks a variety of indices, including the number of views, number of visits, search terms, time on site, time on page, where customers came from, and where they went on the site (path analysis). It allows EIA staff complete access to every detail available from our millions of customer visits. Individual managers and staff can monitor and measure each page of their web products, optimizing their knowledge of customer activities in a more self-service way.

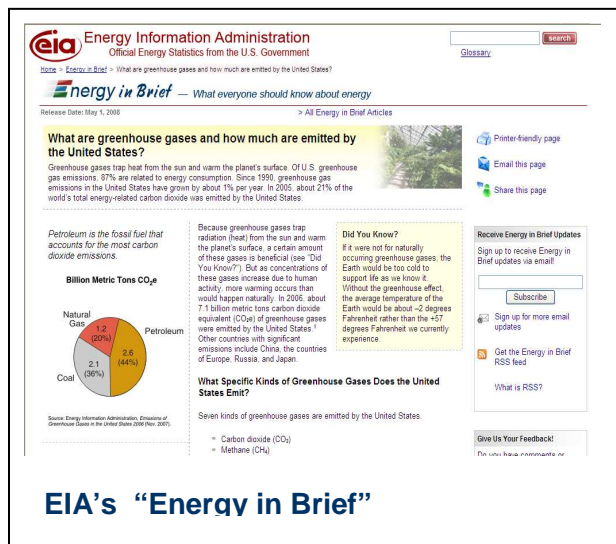
VI. WEBSITE IMPROVEMENTS ALREADY BEING REALIZED

M. Evolution Versus Revolution

21. Beginning in 2006, NEIC has made a succession of improvements to the website as a result of its new corporate web operations and management role, as well as a greater attention to and alignment with customer needs being promoted throughout the Agency. These represent an incremental approach to improving and evolving the EIA website.

- In October 2006, NEIC developed and launched a new "Frequently Asked Questions" section that provided answers to the most common questions asked by members of the public who use our website. These questions were gathered through an analysis of phone and email inquiries coming into NEIC's customer contact center.

- In November 2006, NEIC, in partnership with the Agency's human resources department, developed and launched a new Careers section of the website to accelerate and improve the Agency's employee recruitment efforts.
- In February 2008, NEIC designed and launched a new, more user-centered design for the homepage, www.eia.doe.gov, which included:



- A Featured Content area at the top of the page where to highlight timely and valuable information
- A new A-Z Topics feature that allows customers to find what they are looking for alphabetically
- An improved layout that helps customers find our wealth of information more easily.

- In May 2008, NEIC launched "Energy in Brief," a new online series that explains important energy topics using plain language and makes EIA information more accessible to energy novices.

industry studies, interviews with journalists, analyses of web site visits, and information about how the media use our web site and information. The aim was to make EIA information more accessible to our media customers.

- In October 2008, NEIC launched a new online press room that was guided by Internet

- In January 2009, NEIC redesigned and re-launched the "About EIA" section of its website to improve its usability, findability, and appearance; to more effectively communicate what EIA does to other government organizations, the general public, and prospective employees; and to create a more flexible and scalable structure for the section, that will more easily allow for content to be added in the future.

VII. FUTURE EFFORTS

N. Agency-Wide Web Strategy

22. Concurrent with the transformations to its own organization, NEIC launched an agency-wide initiative in 2007 to develop an enterprise web content strategy. This initiative supports "Goal Four" of EIA's new 5-year Strategic Plan. Specifically, EIA will:

- Develop and implement an EIA-wide plan to guide the development of the public website.
- Define and implement new online products that embody a "web-centric" approach to disseminating information.

23. NEIC's goal is to complete all major tasks associated with developing the EIA Web Strategy by the fall of 2009. Progress made to date includes: a baseline assessment of the current website, audience assessment and persona development, business, functional and technical requirements development, and performance measurement. Tasks still underway are the development of management/governance (both agency-wide and at the Office level) requirements, and funding recommendations.

O. Improved Contract Management

24. Currently, the four main EIA program Offices all have separate vendors whose employees work on-site within these Offices to support the development of web products, particularly data application design and development. Even within a single Office, there may be multiple vendors supporting this function. This produces a certain amount of redundancy in web application development across the Agency and results in web applications that lack uniformity and deliver inconsistent user experiences. It also makes it more challenging to apply agency-wide standards in areas like visual look and feel and data visualization. To address this situation, senior Agency management is considering strategies that would improve web-related contract management across EIA.

P. Public Website Infrastructure Consolidation

25. NEIC and EIA's Office of Information Technology are working collaboratively to upgrade and enhance the infrastructure of the EIA public website. This initiative is consolidating and unifying the Agency's web servers on to one platform to provide a more robust public web presence and employs a best practices approach that simplifies the development, maintenance and operation of this critical asset.

Q. Improving Data Integration

26. "Goal Four" of EIA's new 5-year Strategic Plan also identifies data integration as an important priority for future improvement in many areas, including the public website.

- **Objective:** EIA's data and information are integrated and readily accessible to the appropriate customers.
- **Strategy:** Implement and expand common processes and systems for data collection, processing, storage, dissemination, and internal communication.

27. Regarding data integration, which will be a significant task, NEIC believes that the future of EIA lies in creating an improved data platform or warehouse model where data analysis applications, reports, visualizations, as well as any open APIs would draw data directly from the data warehouse according to appropriate access rules (i.e. not from the operational databases of each office). The data platform would provide a more flexible and solid foundation for evolving and expanding EIA's data services; provide a robust and high quality data format/structure that enables database integration, cross-sector data uses, and rapid application development; follow consistent requirements for data quality, interoperability, open architecture, etc.; facilitate the development of a more consistent set of tools and user experience across data sets; and enable and encourage others to build applications using EIA's data services.