E-Enterprise for the Environment Conceptual Blueprint: Executive Summary

Overview

E-Enterprise for the Environment (E-Enterprise) is a U.S. EPA-state initiative to improve environmental performance and enhance services to the regulated community, environmental agencies, and the public. E-Enterprise will increase transparency and efficiency, develop new environmental management approaches, and employ advanced information and monitoring technologies in a coordinated effort to manage and modernize environmental programs. Some state and EPA programs have begun to streamline and modernize environmental programs and develop sophisticated and advanced information management and monitoring projects. E-Enterprise will build on these experiences. The

rationale for E-Enterprise is that states and EPA can move forward more quickly together, as one enterprise, by coordinating investments, implementing joint program improvements and technologies, and achieving economies of scale. Full realization of the E-Enterprise vision requires states and EPA to collectively recast the business model of environmental protection for the United States and, in doing so, redefine how regulators interact among themselves, with regulated entities, and with the public.

Over the past year, EPA and the states have worked together to scope and refine the E-Enterprise vision. The State-EPA E-Enterprise Working Group empanelled a Blueprint Team and commissioned a Conceptual Blueprint (Blueprint) document to define the principles and primary components of E-Enterprise. This Blueprint is the first step in defining E-Enterprise; subsequent efforts will identify E-Enterprise implementation details. A new state-EPA governance body, the E-Enterprise Leadership Council (EELC), patterned after the successful model of the Exchange Network Leadership Council (ENLC), will now assume leadership and oversee and coordinate E-Enterprise implementation. The business of environmental protection will look very different in 25 years and the seeds of this progress are now in our hands. The Blueprint seeks to identify these seeds and describe how, in partnership, they will be planted and tended.

The Blueprint focuses on the state-EPA relationship. As E-Enterprise moves forward, EPA and states will broaden the collaboration to include tribes, municipalities and other environmental authorities. We plan to invite tribes to join

E-Enterprise for the Environment: The Environmental Regulator Perspective

Some of the benefits regulators can expect from E-Enterprise are:

- Opportunities to collaboratively engage earlier and more effectively in rulemaking, program development and ongoing management.
- A forum for identifying and changing business processes that don't add sufficient value.
- Greater emphasis on innovative environmental management approaches.
- Investments in appropriate information technology and advanced monitoring that support improved environmental outcomes and enhanced service to the regulated community.
- Improved access to and use of timelier, more integrated and higher quality information in the decision-making process.
- Improved credibility with both the regulated community and the public through greater transparency, streamlined processes and updated technology.
- Opportunities for significant cost savings from sharing information technology systems and tools.
- Grants to states to help offset the costs of change, to enable complimentary development efforts and to encourage innovation.
- Application of advanced monitoring and information technologies would allow environmental problems to be spotted and corrected sooner and would add valuable tools to the toolbox for environmental protection programs.

the states and EPA in the governance of E-Enterprise, similar to how tribes participate in the Exchange Network Leadership Council. E-Enterprise will also invite input from the regulated community, non-governmental organizations, educational institutions and the public.

E-Enterprise Design and Operating Principles

The Blueprint team began its work by defining a set of design and operating principles. The principles are a set of grounding assumptions and many echo broader themes of federal and state IT e-government policies (e.g., The White House Digital Government Strategy). The principles reinforce that E-Enterprise is, first and foremost, a collaborative effort to modernize and improve environmental programs and regulations and to do so, in part, by investing in information technology advancements and advanced monitoring technologies and considering new ways of protecting the environment.

The design and operating principles are a set of joint state-EPA commitments to:

1. Manage E-Enterprise from the beginning as a partnership led by a joint governance body and work together to develop funding mechanisms and inform the independent resource investment decisions of partners.
2. Respect existing delegations and operating agreements throughout program changes that are driven by E-Enterprise. If seizing improvement opportunities calls for changes, negotiate these changes through existing channels.
3. Streamline and modernize programs before automating them. Streamlining and modernizing programs includes exploring use of new environmental management approaches to harness program improvements and technologies. New environmental management approaches may require tackling challenging or controversial issues, regulatory changes, and take a long time to complete.

E-Enterprise for the Environment: The Regulated Community Perspective

Regulated entities are expected to benefit from E-Enterprise in many ways, such as:

- Saving time and money by moving away from cumbersome paper-based reporting to streamlined, electronic reporting.
- Using "smart" online tools that help regulated entities understand their regulatory requirements and guide them through the reporting process.
- Allowing regulated entities to satisfy their federal and state reporting requirements in an integrated, streamlined manner, similar to how individuals can electronically prepare their federal and state tax forms using integrated software that reuses common data across the forms.
- Providing opportunities to do business with the regulators in a manner similar to the e-business models we are already using in banking and shopping.

A centerpiece of E-Enterprise will be the development of a new federal regulated facility portal, designed from the ground up to provide better interfaces and tools. The design approach for this portal will be "customer centric" and will include a broad based outreach effort. The outreach will validate assumptions regarding desired service improvements and identify new functionality or business process changes that will reduce burden and improve data quality.

4. Use a business case approach[1] to prioritize activities.
5. Ensure that the program and system development explicitly takes into account the user's perspective.
6. Establish a seamless and secure network of services and systems to improve two-way business transactions between the regulated community and partners and among partners.
7. Ensure systems will work smoothly together, for staff, regulated entities, and the public.
8. Automate access to data to promote re-use of information and services by users and their application developers.
9. Explore the integration of advanced monitoring, data collection, and analysis techniques into programs and explore the new management approaches they might enable.
10. Lower cost of program and technical implementation by providing funding and shared infrastructure.

E-Enterprise Components

The Conceptual Blueprint identifies six E-Enterprise components. The components span the spectrum of technical, programmatic, and advanced monitoring aspects of E-Enterprise and in many cases represent the concrete embodiment of one or more of the principles.

The E-Enterprise Components are:

1. *Modernizing and Streamlining Programs and Regulations*: E-Enterprise projects will require changes to the underlying programs and regulations. This component defines the types and levels of these changes, and how they will impact the spectrum of environmental business processes.   This component actualizes the principle to proactively examine the business case for streamlining, modernizing, or developing new approaches while looking to automate existing processes. E-Enterprise distinguishes between program reforms (i.e., improvements to existing programs) and new management approaches (i.e., new types of activities). It also assumes that both types of changes could be made on their own or be enabled by advanced monitoring and

E-Enterprise for the Environment: The Public Perspective

E-Enterprise will improve public access to environmental information and improve transparency regarding environmental decisions and conditions. Through a new online portal, the public will be able to establish user profiles to design custom pages tailored to contain information of interest. For example, a user could establish an information feed for the water quality of a nearby watershed, or monitor the progress of a nearby facility re-permitting process. States and EPA will also expand the availability of information in ways that enable development of mobile "apps."

 EPA and States will implement new monitoring technologies and tools to deliver new kinds of environmental data to the public. These advances include technologies which allow real time monitoring of pollutants in air and water, cameras which can make previously invisible pollution visible, and miniaturization which can turn a smart phone into a sophisticated monitoring tool. These technologies open up entirely new approaches to monitoring environmental conditions and facility discharges and enlarge the base of potential monitors to include what is often called "citizen science." And most importantly, the overall objective of E-Enterprise for the Environment is to improve environmental protection in this country.

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[1] EPA is currently developing a framework for analyzing the business case for each E-Enterprise proposal for funding. The business case will consider the return on investment for each project as well as broader benefits and impacts. This will enable decision makers to have a consistent set of criteria to apply when evaluating the value of a particular project in advancing the vision and objectives of E-Enterprise.

information technology. Changing how programs operate may require altering the interactions between EPA, states, tribes, local entities, as well as changes in the approaches used to influence the regulated community.

2. The E-Enterprise Advanced Monitoring component is a *Portfolio of Advanced Monitoring Technologies, and New Data Collection and Analysis Techniques*. This E-Enterprise component will establish a portfolio of ready-to-implement advanced monitoring and data collection and analysis solutions, and promote the adoption of these solutions under a model of "build once, use many times." This component also includes an ongoing program to develop new solutions for advanced monitoring technologies and new data collection and analysis techniques. The three aspects of this component are inter-related: new <u>monitoring technologies</u> (e.g. a new sensor) will enable new <u>data collection techniques and</u> these collection techniques will in turn produce (often large) sets of data which will require new <u>analysis techniques</u> to interpret, communicate, and use the data. If successful, states and EPA will routinely build these technologies into our programs and use them to achieve improved environmental performance. At that point, they will no longer be considered "advanced."   Note that the goal of E-Enterprise is the adoption of <u>proven</u> technologies; while E-Enterprise may support the pilot integration of technologies/techniques into programs; it is not a research and development program.

3. *The E-Enterprise Portal*. As one of the signature E-Enterprise investments, EPA intends to launch a major new portal (E-Enterprise Portal).   This portal, or set of portals, will have two major functions:
    A. There will be a regulatory portal to provide an integrated platform through which EPA can offer a growing set of e-transaction services, including e-reporting, e-notifications, and compliance assistance resources. Facilities will be able to customize their own homepages and have ready access to all transactions in one place. To the extent possible, E-Enterprise will seek to ensure that state and EPA portals are linked together as seamlessly as technically feasible so that users that have business on both can easily move between the two. States and EPA will work toward agreement on a set of technical conventions to make this possible.
    B. There will also be a public portal to improve the transparency of EPA information and improve the public's access to that information. The public portal will provide ready access to environmental information about what is going on in any particular area. More broadly, the public portal will provide access to EPA datasets and tools to allow the public to access data in a clear and simple-to-understand format. The portal will also facilitate the public's ability to provide EPA with environmental data gathered through advanced monitoring and other techniques, including smart phone applications.

4. *Partner Access and Transaction Systems*: This component includes all of the partner e-transaction systems that are related to E-Enterprise. This component is the companion to the E-Enterprise Portal and the goal is to ensure that these systems interact smoothly with the EPA Portal.   E-Enterprise envisions new kinds of state-EPA technical collaboration. Previously states had two choices: use their own resources to develop and operate their own systems, with the associated customization and flexibility benefits, or use the EPA national system. Now, with E-Enterprise, there

will be an opportunity to utilize a modular approach in the development of shared technical components and state systems. For instance, EPA can build infrastructure to support common business processes, such as electronic signature or e-reporting capability, provide it as a service, and states can reuse and integrate this 'module' into their systems, thereby preventing duplicative system development.   In other cases, states may elect to use an EPA national system to perform some transactions (e.g., receiving electronic DMRs or air emissions reports) by having data reported directly to an EPA-hosted application and then downloading their data for local use. This modular approach can also support mobile systems which, together with process improvements, can produce transformational changes in traditional activities such as inspections. Finally, this approach will enable application developers to create specialized applications for target audiences including agency staff, facilities, and the public.

5.   E-Enterprise *Open Data and Web Services*.   This component has two aspects: the first is the network of services that will plumb E-Enterprise applications, and the second is the design assertion that all data will be available, with the required level of security, to all authorized or public users. We are not starting from scratch—some of the necessary services are already provided by EPA via the Exchange Network, or via other platforms. Many of these services rely on parts of the E-Enterprise Shared Technical Infrastructure, for example EPA's CDX. This infrastructure is discussed in Component #6, while the services used to access this infrastructure are included in this component.

6.   *E-Enterprise Shared Technical and Programmatic Infrastructure*:   This component consists of the suite of reusable technical and programmatic infrastructure available to partners to support implementation of their E-Enterprise Projects. The Conceptual Blueprint calls for a high level E-Enterprise solution architecture to guide the development of E-Enterprise shared technical infrastructure. The Blueprint also identifies EPA as the lead partner to develop, operate and provide support for the majority of the E-Enterprise shared technical infrastructure.

Managing E-Enterprise

A new body, the E-Enterprise Leadership Council (EELC), will provide coordination and oversight for E-Enterprise activities. Members of the EELC will be state and EPA senior executives whose principal responsibilities are primarily programmatic rather than information technology management. This programmatic emphasis will allow the EELC to engage on the program and policy issues associated with E-Enterprise implementation. The Exchange Network Leadership Council, working in partnership with EELC, will provide oversight and coordination of technical matters.   An E-Enterprise Coordinator will staff the EELC and will manage the work portfolio of the entire E-Enterprise governance and coordinate the flow of issues as they work their way into and through the governance structure.

The EELC will play a key role in soliciting, selecting, prioritizing, and advocating for implementation projects and their resource allocations. The EELC will establish and call for the use of business case analyses to inform its decisions. The EELC may need to manage the real and perceived coordination costs of implementing projects consistent with the E-Enterprise framework. An early follow-on

deliverable to this Blueprint will be a technical solutions architecture which will enable the EELC to say exactly what doing a project the "E-Enterprise way" means for program offices and state system developers.

Next Steps

E-Enterprise is a bold plan that will have a broad reach and a long timeline. It will depend on an effective state-EPA partnership to accelerate the evolution of our programs and speed the integration of new technologies in order to achieve the goals of improved environmental outcomes and the ability to provide 21st century services to stakeholders. While rapid progress is possible in some areas, many of the most far-reaching potential improvements will take time. Planning E-Enterprise activities must begin now to reach a critical mass that enables the operation of its framework and the benefits it provides to become self-evident.

This Blueprint is a living document and the ECOS-EPA E-Enterprise Working Group will formally transmit it to the new EELC as a recommendation. This will allow the EELC to refine and finalize the Blueprint based on the latest information concerning resources, joint governance membership, the status of projects already underway, and other outstanding issues. The Blueprint identifies approximately 30 action items (deliverables) to continue to move forward with E-Enterprise. For instance, the Blueprint calls on the EELC to commission the development of several follow-on products including a "Concept of Operations" for the E-Enterprise Portal, a technical solutions architecture 1.0 for E-Enterprise as a whole, and an E-Enterprise Implementation Plan. Prioritizing and overseeing the implementation of these next steps will be a responsibility of the EELC.