

ECOS | THE ENVIRONMENTAL COUNCIL OF THE STATES

STATE ENVIRONMENTAL AGENCY

**BUSINESS PROCESS
IMPROVEMENT ACTIVITY
2010-2016**



E C O S

ACKNOWLEDGEMENTS

This report was developed by the Environmental Council of the States' Innovation & Productivity Committee. ECOS staff would like to thank our member agencies, for providing the information presented in this report; US EPA's Office of Policy, for their support of ECOS and of the EPA–state partnership; and the co-chairs of ECOS' Innovation & Productivity Committee, for their leadership on this project and their work to promote modern, efficient, and effective environmental management. The co-chairs are:

JOHN MITCHELL, CHAIR

Director, Division of Environment, Kansas Department of Health and Environment

MISAEAL CABRERA, VICE CHAIR

Director, Arizona Department of Environmental Quality

DICK PEDERSEN, FMR. VICE CHAIR

Oregon Department of Environmental Quality

This project has been funded with assistance from the United States Environmental Protection Agency under its cooperative agreement no. X5-83596001 with the Environmental Council of the States. The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency, nor does the EPA endorse trade names or recommend the use of commercial products mentioned in this document.

If you have any questions about this report or ECOS' work on Business Process Improvements, please contact Owen McAleer at omcaleer@ecos.org.

EXECUTIVE SUMMARY

State environmental agencies have adopted a variety of business process improvement methodologies to help them cope with tight budgets and protect our states' natural environment in a more efficient manner. In 2016, the Environmental Council of the States (ECOS), the national nonprofit, non-partisan association of state and territorial environmental agency leaders, conducted member outreach related to business process improvement activities. Project information submitted by the states was compiled, and state input on the benefits, difficulties, and opportunities associated with business process improvement was analyzed and shared in meetings with US EPA, states, and other government entities. Trend analysis was also performed using data from a similar inventory of state activity, compiled by ECOS in 2010. Some of this analysis is provided here.

Responses from the states indicate that there has been increased adoption of business process improvement methodology among these agencies; that applying this methodology to streamline routine operations rather than environmental programs is seen as a safer investment during tight budget times; and that there is an opportunity for states and US EPA to jointly execute business process improvement projects applied to their shared regulatory and administrative processes.

The background is a solid teal color with faint, semi-transparent leaf patterns in the upper left and right corners. The text is white and positioned in the upper left quadrant.

PART 1
INTRODUCTION

BACKGROUND ON BUSINESS PROCESS IMPROVEMENT

The term business process improvement (shortened in this report to BPI) refers to a suite of business-oriented methodologies designed to streamline a given enterprise's operations and achieve efficiencies in order to reduce costs and maximize stakeholder value. BPI includes a number of similar methodologies with names including lean, Six Sigma, kaizen, 5s, kanban, value stream mapping (VSM), and others. Another term, "continuous improvement," is sometimes applied to describe an ongoing commitment on the part of an organization to use one or more of these methodologies to improve and streamline its operations and processes.

"Lean" is among the most common of these methodologies and is sometimes used as shorthand to refer to BPI in general. According to the Lean Enterprise Institute, a lean organization

understands customer value and focuses its key processes to continuously increase it. The ultimate goal is to provide perfect value to the customer through a perfect value creation process that has zero waste. To accomplish this, lean thinking changes the focus of management from optimizing separate technologies, assets, and vertical departments to optimizing the flow of products and services through entire value streams that flow horizontally across technologies, assets, and departments to customers.¹

This description is specific to lean and does not apply equally to other BPI methodologies, many of which are tailored to focus on specific aspects of an organization's performance, such as process speed, product quality, or waste reduction. However, all of these methodologies share an overall emphasis on improving efficiency and value. This report will use the term "lean" only when the specific improvement project or organization being discussed is explicitly categorized under the lean methodology as opposed to other BPI methodologies. (US EPA, in particular, applies the term "lean" to all of its BPI activities.)

Many of the most prominent BPI methodologies are known to have developed in the private sector during the last several decades. Lean, for example, originated in the manufacturing industry in the 1980s, and has been successfully transferred from the private sector to the public sector in many instances. A 2006 study in the UK focused on implementation of lean methods in the public sector identified the following factors for success in this transition: organizational culture and readiness, managerial commitment to lean, adequate resources, clear communication, and strategic approach.² The study also said that in order to ensure lean's

¹ "What is Lean?" Lean Enterprise Institute, accessed March 16, 2016, <http://www.lean.org/WhatsLean/>.

² Zoe Radnor et al., "Evaluation of the Lean Approach to Business Management and its Use in the Public Sector" (Social Research Finding No. 20), Scottish Executive Social Research, Edinburgh, UK, 2006, <http://www.gov.scot/Resource/Doc/129662/0030900.pdf/>.



Continuous improvement initiatives at our agency have maximized the limited resources to provide valuable outputs to the our citizens, business and industry, and environmental partners. Although an improved process is the main result of an event, we also gain enhanced relationships with the customer (permit holder, citizen, business, nonprofit, etc).

—*State official*



success in the public sector, government agencies must possess

an awareness or realization of the need for improvement, the capacity to deal with change and an organizational culture receptive to making changes to processes as a result of customer demand. The workforce should also be engaged in the changes and thereby empowered to make improvements to the process in which they work.³

In US regulatory agencies, lean methods have been demonstrated to produce faster managerial decision-making and significantly reduced backlogs.⁴

State environmental agencies in the US have adopted a number of approaches to incorporating BPI practices and principles into both operational and programmatic activities. In times of budget constraints, this practice has become even more commonplace, and has allowed these agencies to continue performing their continuously expanding administrative and regulatory duties. In environmental agencies, an example of the BPI concept of a “value stream” could be the process of permitting air emissions of a certain type, approving a brownfield site for redevelopment, or hiring new agency staff.⁵

BPI in the environmental regulatory sector is taking place at the state level, at the federal level, and jointly between the two. In January 2016, US EPA established a Lean Action Board to promote lean in environmental protection, and to evaluate and select a limited number of EPA and state agency lean projects to be transferred or scaled up. The eight-member board consists of top-level management representatives from state agencies and US EPA regional offices and headquarters.

ECOS' ROLE WITH STATE BPI ACTIVITIES

In 2010, ECOS compiled a list of state environmental agency BPI activities, including planned and completed projects, challenges encountered, and other data. Through this project, ECOS sought to build individual state capacity for BPI by identifying and facilitating the sharing of information on current state BPI practices. In 2016, ECOS undertook a second such state outreach effort focused on recent (2014–16) BPI activity. This effort led to an inventory of state BPI projects completed since 2010, filling the information gap that was identified during this period. This new compilation represents an opportunity to gain insight into the trends of state BPI activities and the changing landscape of this emerging practice within environmental protection.

³ Ibid.

⁴ Biniam Gebre, et al., “Transforming Government Performance through Lean Management,” McKinsey Center for Government, December 2012, http://www.mckinsey.com/~media/mckinsey/dotcom/client_service/public%20sector/pdfs/mcg_transforming_through_lean_management.ashx/.

⁵ “About Lean Government,” US Environmental Protection Agency, accessed March 16, 2016, <https://www.epa.gov/lean/about-lean-government/>.



Our agency has achieved reduced air permitting turnaround times of 50% (and eliminated backlog); reduced brownfield remediation process time by nearly 45%; and provided predictable [permit] review for most applications...

These and other efficiencies implemented have allowed the agency to sustain permitting programs and operations with a workforce reduced by over 10% since 2008.

— *State official*



The background is a solid teal color with faint, semi-transparent leaf patterns in the upper left and right corners. The text is centered in the upper half of the page.

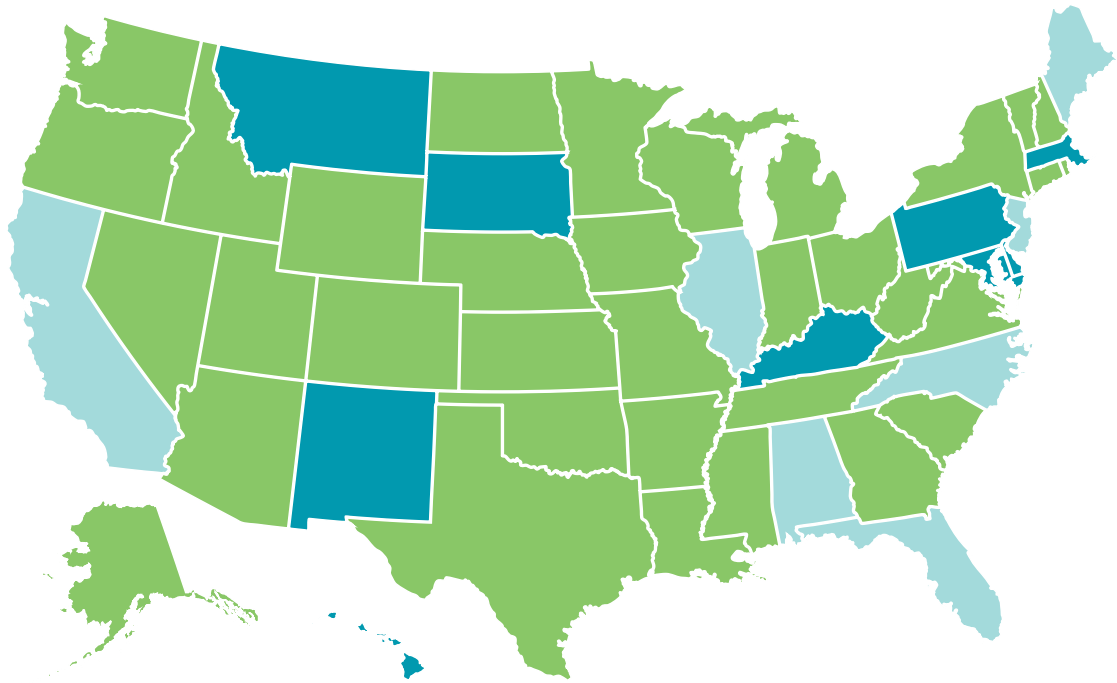
PART 2
RESULTS AND
ANALYSIS

OVERVIEW

Disclaimer: the following section is based on state information received before May 2016. ECOS may continue to periodically update this report to reflect further submissions.

In all, forty-three states and the District of Columbia replied to ECOS' outreach, and thirty-five of the respondents reported that their agency had completed BPI activities in 2014–16. Figure 1 displays each state's response category.

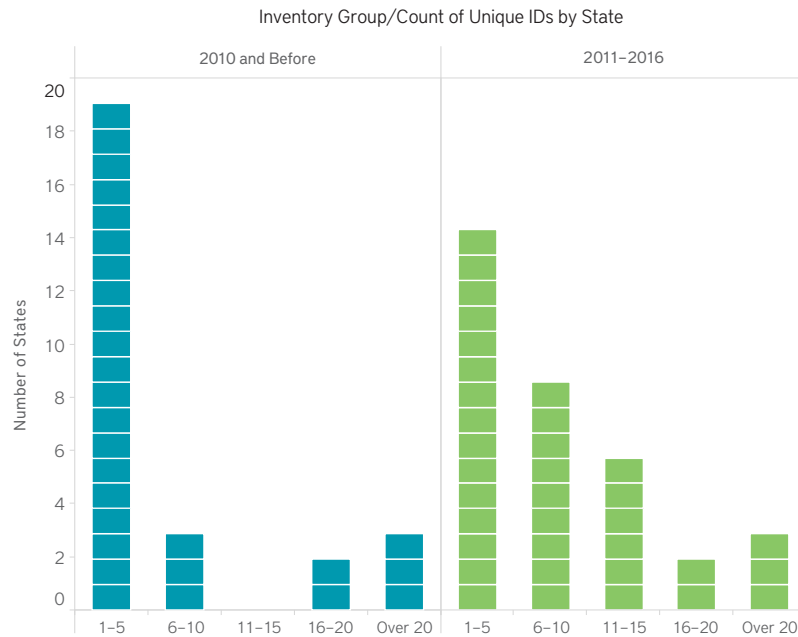
FIGURE 1: STATE BPI ACTIVITY/INACTIVITY (AS REPORTED TO ECOS)



LEGEND	
THIRTY-FOUR STATES AND DC REPORTING PROCESS IMPROVEMENT ACTIVITY	AK, AR, AZ, CO, CT, DC, GA, IA, ID, IN, KS, MI, MN, MO, MS, ND, NE, NH, NV, NY, OH, OK, OR, RI, SC, TN, TX, UT, VA, VT, WA, WI, WV, WY
NINE STATES NOT REPORTING ACTIVITY (OR LEFT QUESTION BLANK)	DE, HI, KY, MA, MD, MT, NM, PA, SD
NO RESPONSE RECEIVED (SEVEN STATES)	AL, CA, FL, IL, ME, NC, NJ

The most general data from state responses showed an increased adoption of BPI practices by states. More states reported completed BPI projects in 2016 than in 2010 (thirty-five respondents, up from twenty-eight in the 2010 data), and states reported, on average, a greater number of projects completed. Figure 2 shows how state the agencies that responded in the two years were distributed between five categories corresponding to the number of reported BPI projects completed (5 or fewer, 6–10, 11–15, 16–20, or more than 20). In particular, note that the number of states reporting 6+ projects more than doubled, from eight states in 2010 to twenty in 2016.

FIGURE 2: HISTOGRAM OF TOTAL COMPLETED PROJECTS REPORTED BY STATES



METHODOLOGY AND FINDINGS

ECOS requested that states provide, to the best of their ability, specific information about each individual completed BPI project. The responses varied widely, with some states providing information, documentation, and project data on hundreds of projects, and others responding with narrative descriptions of a smaller number of projects. Based on the information that states provided on individual BPI projects, ECOS was able to parse the state responses into individual data points for each project. This enabled ECOS to perform quantitative analysis on the full set of completed project data.

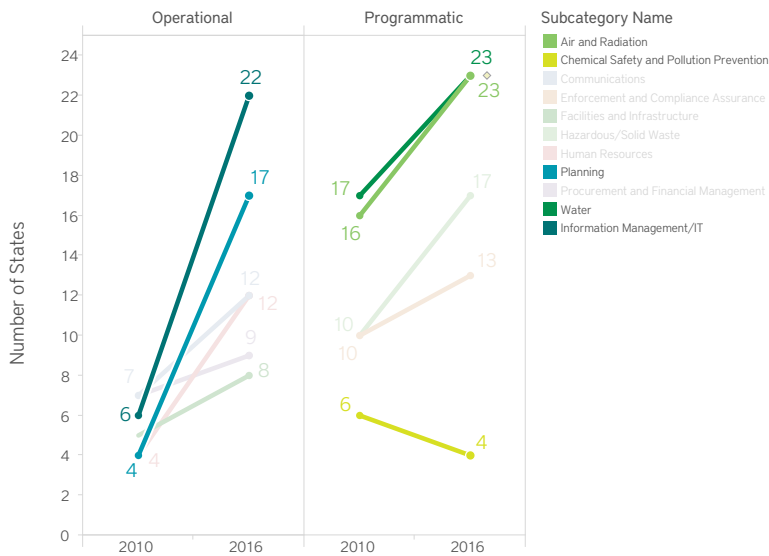
The primary questions for analysis were related to the agency function or process on which an improvement project was focused. A set of eleven categories was developed (shown below in Figure 3), each one corresponding either to an operational function common to any enterprise or to a program area unique to environmental agencies. Each data point was categorized under one of the eleven options (or as “other” or “uncategorized”) based on the corresponding project’s specific focus. A second category could also be associated with a data point for projects that encompass multiple areas.

FIGURE 3: BPI PROJECT CATEGORIES

PROGRAMMATIC CATEGORIES:	OPERATIONAL CATEGORIES:
Air and radiation	Communications
Chemical safety/pollution prevention	Facilities and infrastructure
Enforcement and compliance assurance	Human resources
Hazardous/solid waste and emergency response	Information management/IT
Water	Planning
	Procurement and financial planning

The 2010 data was categorized in the same manner described above: responses were parsed into individual project data points, which were then associated with the same categories using a dual categorization system. This enabled ECOS to compare the overall figures and project category data between 2010 and 2016 and analyze changes in BPI implementation that occurred during this period. This analysis resulted in the information displayed in Figure 4. The data from states shows that the overall increase in BPI adoption was reflected in each of the categories but one.

FIGURE 4: STATE ACTIVITY BY PROJECT CATEGORY, 2010 AND 2016 CATEGORIES

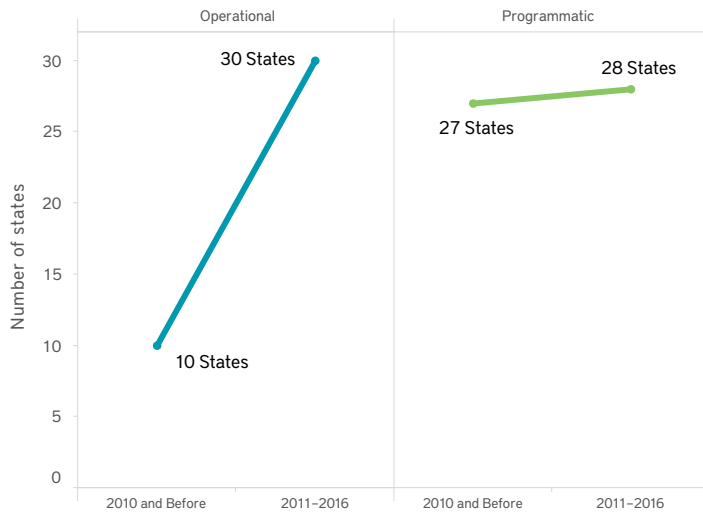


OPERATIONAL VS PROGRAMMATIC BPI

As shown in Figure 3, the individual project categories fit into two overarching groups based on the process being streamlined: “programmatic” processes are specific to an environmental regulatory agency, and “operational” processes are those that are shared by most types of organizations. Figure 5 shows the contrast in the number of states reporting activity in these two categories between 2010 and 2016. The number of states completing operational projects saw significant growth, while the number completing programmatic projects was virtually unchanged. Additionally, the number of operational projects surpassed the number of programmatic projects.

The body of state responses seems to suggest some difference between operational and programmatic processes in terms of replicability across industries or regulatory fields and the availability of BPI literature or best practices specific to the process being streamlined. In other words, the more specialized a business process, the less information is available to a prospective streamliner—and consequently the riskier it is to streamline. It is not clear to what extent the differences between operational and programmatic business processes affect environmental agencies’ decisions about where to apply their BPI resources, but this topic is certainly ripe for future discussion.

FIGURE 5: STATES IMPLEMENTING OPERATIONAL VERSUS PROGRAMMATIC BPI, 2010 AND 2016



PLANNED BPI ACTIVITIES

ECOS also requested information on each state’s planned BPI activities for the year 2016. Of the forty-four agencies responding, twenty-five gave specific project information, nine indicated a general intention to do BPI, and nine either said they did not plan to

conduct any such activities or did not respond to the question. ECOS coded and processed the project-specific state responses using the same process as was used for the completed project data. The categorized projects planned for 2016 are displayed in Figure 6; planning, air and radiation, and hazardous/solid waste led the field of focuses for planned projects.

Most importantly, the data on planned projects suggest that states are on pace to complete more lean events in 2016 than 2015. In their responses, states identified eighty-one planned projects for 2016, in addition to the eleven completed projects already reported for 2016. Although 2015 saw 119 projects reported, most of the data on planned projects was collected in the first month of 2016 if not earlier, so these figures offer considerable hope that the upward trend in BPI projects across states will continue in the near-term.

CHALLENGES TO BPI IMPLEMENTATION

Prior to the 2016 outreach effort, ECOS heard repeatedly from states that the greatest hurdle to fully realizing the benefits of BPI thinking and methodology is the implementation phase that occurs after a streamlining event has been conducted. Generally, the implementation phase generally consists of the project manager(s) working with different departments in the agency to make the changes to business processes that were identified as beneficial during the initial streamlining event.

FIGURE 6: STATE BPI PROJECTS PLANNED FOR 2016

CATEGORY	NUMBER OF PROJECTS PLANNED	STATES PLANNING PROJECTS
Planning	10	9
Air and radiation	10	7
Hazardous/solid waste and emergency response	8	7
Information management/IT	9	7
Other	7	6
Uncategorized	7	6
Water	10	7
Human resources	5	5
Procurement/financial management	5	4
Communications	4	4
Enforcement and compliance assurance	2	2
Facilities and infrastructure	0	0
Chemical safety and pollution prevention	0	0

ECOS asked environmental agency officials to identify the three greatest difficulties they encountered during this implementation phase. Most states did so, and the majority of their responses related to eight general issues—Figure 7 shows each challenge issue and the frequency with which it was mentioned. The top four challenges are discussed in the following paragraphs.

Institutional Culture: The challenge most commonly mentioned, by a considerable margin, was a resistance to change and skepticism of BPI on the part of state agency staff. Three states had multiple comments under this category. Some examples of specific language used: “change-resistance,” “pace of change,” “this is a journey,” “reluctance to let outsiders work on a program’s operations,” and “perceived as a criticism of past work.”

Time/Staff Resources: Some examples of specific language used to describe this issue: “juggling current workload with implementation efforts,” “hard to pull staff time away from short-term productivity,” “lack of staffing leads to fixing symptoms rather than root cause.” While respondents were not prompted to list their challenges in any particular order, it is worth noting that of the fourteen comments in this category, eight were first on their respondent’s list of challenges (compared to six out of twenty for Institutional Culture).

FIGURE 7: CHALLENGES TO IMPLEMENTATION OF BPI EVENTS, IDENTIFIED BY STATES

RANK	CHALLENGE OR ISSUE	NUMBER OF COMMENTS	NUMBER OF STATES
1	Institutional culture	20	16
2	Time/staff resources	14	9
3	Implementing change	12	9
4	Scope and strategy issues	10	6
5	Staff capacity/knowhow	8	8
6	Lack of funding	8	8
7	Metrics, documentation, and communication	8	7
8	Lack of it resources	6	6
9	State or federal rules/administration change	5	5
10	Other	2	2

Implementing Change: Some examples of language used: “keeping the discipline to execute change,” “tracking follow-up,” and “holding the gain (documentation of success).”

Staff Capacity/Knowhow: The frequent mention of staff-related challenges mirrors the many suggestions by states for a joint lean project with EPA focused on staff training in BPI.

The fact that staff capacity and institutional culture are both represented in the top four challenges illustrates how state agency staff are often both unfamiliar with and skeptical of BPI methodologies and initiatives. The responses indicate that top state agency officials seem to be realizing the importance of tracking, quantifying, and communicating the benefits of these initiatives to both external and internal audiences. One specific challenge identified in this category was “building capacity of experienced facilitators.”



Another challenge is getting a critical mass of middle managers to take active ownership over the Lean program [and encourage] active problem solving on a daily basis.

— *State official*



Most of the state respondents for this question would probably say that the challenges they identified are persistent and without any straightforward, blanket solution. However, frequent and in-depth knowledge-sharing can be effective in helping states—especially those inexperienced with BPI, and those encountering a particular challenge for the first time—identify best practices from their peer agencies for managing any particular challenge in the BPI context. Taken as a whole, the information about any leading or persistent challenges to BPI implementation can inform states’ decisions about where to bolster their existing training programs.

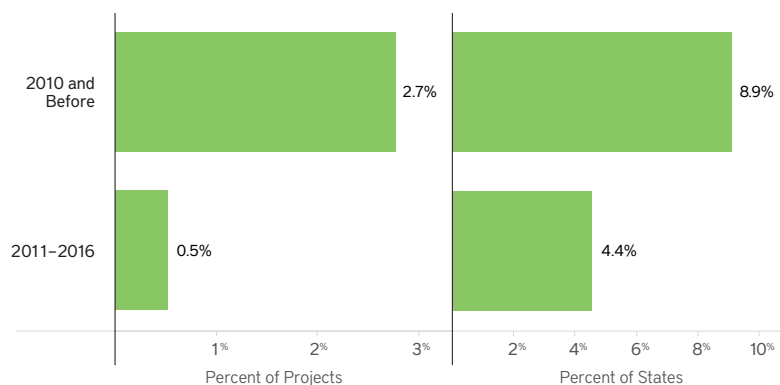
While this report does not contain information on which states reported each of the challenges in the chart above, any state looking to confer with peer agencies that have encountered a similar challenge is encouraged to contact ECOS.

OPPORTUNITIES FOR JOINTLY STREAMLINING SHARED PROCESSES WITH US EPA

States and US EPA have a relationship of cooperative federalism, in which they work jointly to administer and enforce the United States’ environmental regulations. These two levels of government are closely linked, both financially and administratively, and the shared processes between states and US EPA comprise a significant component of the overall enterprise of environmental regulation.

Streamlining these shared processes is often more difficult precisely because they are shared—when multiple agencies are involved, there are bound to be more institutional and personal barriers to the negotiation and implementation entailed in BPI methodology. Accordingly, the state responses showed that few of the projects involved EPA as a partner or were focused on joint state–EPA processes. In fact, the percentage of states that worked jointly with US EPA, or completed joint projects with the agency, decreased between 2010 and 2016, as seen in Figure 8.

FIGURE 8: PERCENTAGE OF STATE LEAN PROJECTS CONDUCTED WITH U.S. EPA INVOLVEMENT, 2010 AND 2016



However, there is both a need to streamline and an opportunity for substantial gains from streamlining of joint state–EPA processes, especially when these processes constitute a considerable component of the overall environmental governance enterprise in the US. The reduced administrative burden from streamlining these processes will also pay dividends by allowing for greater transparency and improved relations in the state–federal relationship. The increased adoption of

joint state–EPA BPI events has received support from both the state and EPA sides, and is one of the key goals identified by US EPA’s Lean Action Board in 2016.

ECOS, as a third-party entity in the coordination of the cooperative federalism process, is both positioned and committed to identifying opportunities for streamlining shared state and US EPA business processes. ECOS solicited state environmental agency staffs’ suggestions on the greatest opportunities in this sphere. Similar to the other data analyses conducted in this project, a set of themes was determined and each state response was tagged with any related themes. Because state responses to this question were more narrative in scope and less easily parsed into discrete items, some were tagged multiple times. ECOS identified six common themes in the suggestions made by states for joint BPI projects with EPA. These are displayed in order of frequency in Figure 9, and the top four themes are discussed in the following paragraphs.

FIGURE 9: THEMATIC SUMMARY OF STATE SUGGESTIONS FOR JOINT BPI PROJECTS WITH EPA

RANK	THEME	NUMBER OF COMMENTS
1	Training/knowledge-sharing	8
2	Grants process	5
3	PPA/PPG	3
	CWA §319	3
5	Air permitting	2
	Compliance/enforcement	2
7	Other notable suggestions	(See final bullet below for list)

Training/Knowledge-Sharing: With eight references, lean-oriented training and knowledge sharing is the issue that received the most support for joint state–EPA coordination. The majority of these comments refer specifically to the need for more effective dissemination of the results or improvements realized through lean events. Notably, one respondent from Region 4 stated that s/he was unaware of any lean events in their region, even though several lean events in Region 4 have been documented.

Grants Process: This high ranking for the grants process is logical since it is such a prominent feature of the cooperative federalism relationship. Specific items that were called out included review and approval timelines for §319 grants and coordination of joint grant applications. The ECOS State Grants Subgroup (SGS) has examined ways of improving grant processes. For example, the SGS recently submitted comments to the EPA Office of Grants and Debarment (OGD) on a proposed metric that would encourage timelier awarding of EPA Clean Water and Drinking Water SRF grant money to states.

PPA/PPG Process: The Performance Partnership Agreement/Performance Partnership Grants process is also a prominent aspect of the cooperative federalism relationship, and is a subset of the grants process. The PPA/PPG-related comments are all general in nature but supportive of a joint streamlining event.

Section 319 of the Clean Water Act (Nonpoint Source Pollution): One respondent suggested using a lean event to coordinate state priorities in establishing a §319 first-in/first-out funding mechanism. Another respondent suggested improving the review and approval of §319 grants, including timelines. One respondent's agency is hoping to build upon its water monitoring VSM project with an event to improve cross-program collaboration at the watershed level, and suggests that EPA would be a valuable partner in this exercise.

Other Notable Suggestions: The following specific topics for joint state–EPA lean events were each suggested once: smart tools, SIP, superfund, CROMERR, ePermitting, performance metrics, SRF funding, gap analysis, and mobile app development.



The transfer of joint event information and suggestions to other state agencies should occur at the executive management level rather than the program level in order to help maintain consistency in business practices across environmental programs.

—*State official*



The background is a solid teal color with faint, overlapping leaf patterns in a slightly darker shade of teal, primarily concentrated in the upper left and right corners.

PART 3

BPI RESOURCES
AND
CONCLUSION

RESOURCES AND INFORMATION ON BPI

It is important for state environmental agencies and other government bodies considering BPI to learn about the field through consulting a variety of materials and vantage points. Below are brief descriptions of several online resources on BPI, spanning macro- and micro-scale investigations, toolkits/practica, academic reports, and case studies.

Lean and Information Technology Toolkit: In December 2015, an ECOS/EPA E-Enterprise workgroup released the Lean and Information Technology Toolkit. The workgroup was established to explore the ways in which new IT approaches, when combined with lean methodology, can help agencies streamline, modernize, and expand the services they provide to customers. The toolkit focuses on a three-pronged approach to combining lean and IT:

- Efficiently design new products and services to better meet customer needs (lean startup),
- Improve the efficiency and effectiveness of existing processes (lean process improvement), and
- Reduce the costs and risks of developing new IT products (agile development).

The toolkit provides how-to guidance, resources, and tips for making improvements in product conceptualization, process improvement, and IT product development, and describes how agencies can collaborate effectively on improvement projects. It is available at http://www.exchangenetwork.net/ee/Lean_and_Information_Technology_Toolkit_December2015.pdf.

“Improving Service Delivery in Government with Lean Six Sigma”: This is a 1977 report written for the IBM Center for the Business of Government by Dr. John Maleyeff, of Rensselaer Polytechnic Institute’s Lally School of Management and Technology. The report includes a practical background; comparisons between two of the most prominent businesspractice improvement methods, lean and six sigma; and specific suggestions for envisioning and implementing lean/six sigma projects in the public sector. This report does not cite examples of Lean Six Sigma use in environmental protection, but the case studies of similar events in various other areas of government can serve as effective comparisons. The report is available at: <http://www.businessofgovernment.org/sites/default/files/MaleyeffReport.pdf>.

US EPA Archive Lean Case Studies: US EPA has collected materials from several EPA, state, and joint state–EPA lean events, including some case study documents as well as posters and links to state websites. Links to the two lean archive pages are below:

- [State Lean Case Studies](#)
- [US EPA Lean Case Studies](#)

US EPA Lean Action Board: In January 2016, US EPA established a Lean Action Board to promote lean in environmental protection, and to evaluate and select a limited number of EPA and state agency lean projects to be transferred or scaled up. The eight-member board consists of representatives from state agencies, regional offices, and US EPA headquarters. Learn more and follow the board’s progress at <https://www.epa.gov/lean/lean-action-board>.

State BPI Websites: Much of the most specific and reliable information on state BPI endeavors is available directly from the state agencies themselves. For more information or a listing of state BPI webpages, please contact ECOS.

CONCLUSION

Environmental agencies' use of BPI methodology is expanding nationally, and is quickly becoming standard practice. The input that ECOS collected from state environmental agencies demonstrates a great deal of variation among states in terms of the types of BPI methodologies used, the number and magnitude of projects conducted, and the programmatic focus of BPI projects.

Any state environmental agency considering an initiation or expansion of BPI activities will want to have a clear strategy for BPI implementation and continuous improvement. Project leaders will face many important decisions over the course of their project's—or their agency's—BPI experience, perhaps even before organizing and implementing an initial BPI event. These include:

- Which methodology (lean, 5S, six sigma)?
- Which operational process or part of an environmental program is being targeted?
- Which external stakeholders should be included, if any?

All of these questions will impact the effectiveness of an agency's BPI activity and the likelihood for continued leadership support of these methodologies. Effective development of a BPI strategy will entail considering which budgetary, regulatory, political, or institutional concerns are most pressing; remaining open to whichever approach, methodology, or application best addresses those concerns; and identifying goals for progress on these concerns that can be measured and communicated to internal and external stakeholders.

States are striving to share their experiences with one another, with US EPA headquarters and with their regional offices, to promote better understanding of the specific challenges and opportunities associated with using BPI in this field. The resources and examples provided in this report and its appendices are intended to promote and serve as a mechanism for this knowledge sharing, and to help inform specific states' strategies for BPI and continuous improvement. ECOS welcomes BPI-related input from any state agency staff at any time, and interested state agencies new to BPI are encouraged to contact ECOS.

The background is a solid teal color with faint, semi-transparent leaf patterns in the upper left and right corners. The leaves are detailed, showing veins and serrated edges.

APPENDICES

APPENDIX A: STATE ENVIRONMENTAL AGENCY BPI POINTS OF CONTACT AND WEBSITES

#	STATE	PRIMARY CONTACT	TITLE	PRIMARY CONTACT E-MAIL	SECONDARY CONTACT NAME	TITLE	SECONDARY CONTACT EMAIL	AGENCY-SPECIFIC BPI WEBPAGE	STATE-WIDE BPI WEBPAGE
1	AK	Tom Turner	EPM I	tom.turner@alaska.gov					
2	AR	Tim Cain	Chief Operating Officer	cain@adeq.state.ar.us				http://www.adeq.state.ar.us	
3	AZ	Misael Cabrera	Director	Cabrera.misael@azdeq.gov					
4	CO	Heather Weir	Director, Office of Planning, Partnerships and Improvement	heather.weir@state.co.us				https://www.colorado.gov/pacific/cdphe-lpha/quality-improvement	https://sites.google.com/a/state.co.us/colorado-performance-management/home
5	CT	Nicole Lugli	Office Director, Planning and Program Development	nicole.lugli@ct.gov				http://www.ct.gov/deep/cwp/view.asp?a=2699&Q=455414&deep-Nav_GID=1511	
6	DC	Adriana Hochberg	Chief of Staff	adriana.hochberg@dc.gov					
7	DE	Carla M. Cassell-Carter	Senior Fiscal Management Analyst	carla.carter@state.de.us	Robert Zimmerman	Chief Operating Officer	robert.zimmerman@state.de.us		
8	GA	Chuck Mueller	Director Cross Media Programs	chuck.mueller@dnr.ga.gov	N/A				
9	HI	Keith Kawaoka	Deputy Director for Environmental Health	keith.kawaoka@doh.hawaii.gov					
10	IA	Jerah Sheets	Executive Officer	jerah.sheets@dnr.iowa.gov				http://lean.iowa.gov/	

#	STATE	PRIMARY CONTACT	TITLE	PRIMARY CONTACT E-MAIL	SECONDARY CONTACT NAME	TITLE	SECONDARY CONTACT EMAIL	AGENCY-SPECIFIC BPI WEBPAGE	STATE-WIDE BPI WEBPAGE
11	ID	Kari Kostka	Policy Analyst	kari.kostka@deq.idaho.gov	Jess Byrne	Deputy Director	jess.byrne@deq.idaho.gov		
12	IN	Jere J. Riggs	Continuous Improvement Coordinator, Indiana Department of Environmental Management	jriggs1@idem.in.gov	Niles Parker	Deputy Assistant Commissioner, Indiana Department of Environmental Management	nparker@idem.in.gov		
13	KS	John Mitchell	Director, Division of Environment	jmitchell@kdheks.gov					
14	KY	Ron Price	Staff Assistant	ronald.price@ky.gov					
15	LA	Denise Bennett	Deputy Secretary	denise.bennett@la.gov	Karyn Andrews	Undersecretary	karyn.andrews@la.gov		
16	MA	Victoria Phillips	MassDEP Dir. Enterprise Information Office	victoria.phillips@state.ma.us	Ann Lowery	Assistance Commissioner Policy and Planning	ann.lowery@state.ma.us		
17	MD	Sue Battle-McDonald	Director, Office of Performance Improvement	sue.battle-mcdonald@maryland.gov					
18	MI	Carrie Hardigan	Enforcement Specialist / DEQ Process Improvement Team Lead	hardiganc@michigan.gov	Amy Epkey	Deputy Director	epkeya@michigan.gov		
19	MN	Cathy Moeger	Director, Operations Division	cathy.moeger@state.mn.us	Sherryl Livingston	Supervisor, Organizational Improvement Unit	sherryl.livingston@state.mn.us		
20	MO	Todd Sampsell	Deputy Director	todd.sampsell@dnr.mo.gov	Ginny Wallace	Chief, Planning and Continuous Improvement	ginny.wallace@dnr.mo.gov		
21	MS	Richard Harrell	Director, Office of Pollution Control	richard_harrell@deq.state.ms.us				www.deq.state.ms.us	

#	STATE	PRIMARY CONTACT	TITLE	PRIMARY CONTACT E-MAIL	SECONDARY CONTACT NAME	TITLE	SECONDARY CONTACT EMAIL	AGENCY-SPECIFIC BPI WEBPAGE	STATE-WIDE BPI WEBPAGE
22	MT	Tom Livers	Director	tlivers@mt.gov					
23	ND	David Glatt	Section Chief	dglatt@nd.gov					
24	NE	Dennis Burling	Deputy Director	dennis.burling@nebraska.gov					
25	NH	Bob Minicucci	NHDES Lean Team Chair (until 2/29/16)	robert.minicucci@des.nh.gov	Vince Perelli	Administrator, Planning, Prevention and Assistance Unit	vincent.perelli@des.nh.gov	http://des.nh.gov/organization/commissioner/lean/index.htm	http://lean.nh.gov
26	NV	David Emme	Administrator	demme@ndep.nv.gov					
27	NY	Mary Roy		maroy@dec.ny.gov					
28	OH	Cindy Money	Project Manager (Lean Coordinator and Training Manager)	Cindy.Money@epa.ohio.gov				http://www.lean.ohio.gov/ScorecardResults.aspx	
29	OK	Roy Walker	Assistant Division Director-Admin	roy.walker@deq.ok.gov					
30	OR	Kerri L. Nelson	Central Services Administrator	nelson.kerri@deq.state.or.us					
31	PA	Nora Alden	Executive Assistant	nalden@pa.gov					
32	RI	Michaela Brockmann	Programming Services Officer	michaela.brockmann@dem.ri.gov	Louis Maccarone	Senior Sanitary Engineer	louis.maccarone@dem.ri.gov	http://www.governor.ri.gov/initiatives/lean/	
33	SC	Shelly Wilson	Permitting and Federal Facilities Liaison	wilsonmd@dhec.sc.gov	Jeremy VanderKnyff	Director, Office of Quality Improvement and Project Management			

APPENDIX B: BPI QUESTIONNAIRE DISTRIBUTED TO STATES

1. Respondent Name/Title/Email
2. If you are not your agency's business process improvement (BPI) point-of-contact, please enter this information below: [Name, Title, Email] [Name 2, Title 2, Email 2]
3. Please provide the URL of any website(s) where information on your state's BPI activities can be found. If none, please enter "none" in the box.
4. Please briefly describe your state's approach to considering BPI. This includes if your state uses these techniques or not, what resources you may have consulted, any specific techniques employed (i.e. lean, Kaizen, etc.), training completed, other information of interest.

Some state governments have established state-wide offices of innovation or process improvement. Please include in your response whether your state has set up this type of office.

If your state environmental agency has not adopted an approach or established an innovation office, please enter "none" in the box.

5. If you entered "none" to question 4, please briefly describe the primary challenges or obstacles that have prevented your agency from undertaking significant BPI activities.
6. Please provide a summary of BPI events and projects completed by your state's environmental agency in the past two years, or extending back to 2010 if such information is readily available. Any detail you wish to provide such as project details, tracking or outcome metrics, written case studies or project descriptions is welcome. If none, please enter "none" and proceed to question 8.

You may wish to use your state's response to the 2010 summary for reference ([link](#)). States may e-mail attachments to omcaleer@ecos.org.

7. Please briefly describe the primary benefits from BPI implementation that your agency has seen or anticipates.
8. Please briefly describe the top three challenges or obstacles from BPI implementation that your agency has seen.
9. Please briefly describe any future BPI events and projects that your state environmental agency has planned for 2016.
10. Do you have any suggestions for BPI projects or events that state environmental agencies and EPA staff should jointly consider, or suggestions for transferring completed joint events to other states and regions?
11. Is there any other information you would like to provide?



E C O S

THE ENVIRONMENTAL COUNCIL OF THE STATES
50 F STREET NW, SUITE 350
WASHINGTON, DC, 20001
202-266-4920