



Lean in Government Starter Kit Version 4.0

***How to Plan and Implement Successful
Lean Initiatives at Environmental Agencies***



OTHER PUBLICATIONS FROM THE LEAN GOVERNMENT INITIATIVE

- *Lean and Information Technology Toolkit*
- *Lean Leadership Guide*
- *Lean Government Event Scoping Guide*
- *Lean Government Methods Guide*
- *Lean Government Metrics Guide*
- *Lean Government Implementation Guide*
- *Lean Transference Primer*
- Case studies and other information about EPA and state Lean activities can be found at the EPA Lean website (www.epa.gov/lean).



ACKNOWLEDGMENTS

We are pleased to announce the release of version 4.0 of the *Lean in Government Starter Kit*. In the spirit of Lean and continuous improvement, version 4.0 (released 2017) builds on the information, guidance, and resources included in the original Starter Kit published in 2007, version 2.0, published in 2009, and version 3.0, published in 2011. In particular, version 4.0 includes additional information on the plan-do-check-act continual improvement framework, implementation and follow-up, and sharing Lean successes. It also contains new versions of key resources such as the Lean team charter, metrics checklist, implementation plan, and report-out presentation template.

The original Starter Kit was developed through a collaborative process involving representatives from five states (Delaware, Iowa, Michigan, Minnesota, and Nebraska), the Environmental Council of the States (www.ecos.org), and the U.S. Environmental Protection Agency (www.epa.gov). EPA's Office of Policy provided advisory and contractor support to this effort.

The EPA-state workgroup coordinating the development of the Starter Kit included the following agencies:

- Delaware Department of Natural Resources and Environmental Control (www.dnrec.delaware.gov)
- Iowa Department of Management (www.dom.state.ia.us)
- Michigan Department of Environmental Quality (www.michigan.gov/deq)
- Minnesota Pollution Control Agency (www.pca.state.mn.us)
- Nebraska Department of Environmental Quality (www.deq.state.ne.us)

Special recognition should be given to the Iowa Department of Management's Office of Lean Enterprise. Many of the resources in this Starter Kit are based on resources that have been prepared for agency managers in Iowa (these resources are available at <http://lean.iowa.gov>).

Version 4.0 of this Starter Kit includes insights and lessons learned from more recent Lean experience at EPA and numerous state environmental agencies. The Starter Kit also draws on experience, resources, and lessons with Lean implementation shared by representatives of other federal agencies who have used Lean.

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GUIDE TO RESOURCES IN THE LEAN IN GOVERNMENT STARTER KIT

This Starter Kit contains three types of resources:

- ➔ **Practical guidance and background information on how to use Lean methods to improve agency processes (Chapters 1–7)**
 - Look for “Resources” textboxes throughout the document for links to supporting tools in Appendix B
- ➔ **Bibliography of Lean References (Appendix A)**
- ➔ **Resources, tools, and templates to support agency Lean efforts (Appendix B), covering the following topics:**
 - Understanding Lean and the continual improvement system
 - Selecting a Lean project and method
 - Lean project scoping
 - Planning a Lean event
 - Conducting a Lean event
 - Lean implementation
 - Diffusing Lean activity and becoming a Lean enterprise

The website version of the Lean in Government Starter Kit (<https://www.epa.gov/lean/lean-government-starter-kit-version-40>) contains downloadable versions of all the resources in Appendix B, as well as additional resources available only on the website.

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CHAPTER 1. INTRODUCTION

Since 2003, environmental agencies at federal, state, and local levels have used Lean methods to advance their mission—protecting human health and the environment—in better, faster, and cheaper ways. Numerous other government agencies have also used Lean to improve their programs and services. Lean government enables public agencies to provide more value to customers by eliminating inefficiency and other wastes from government processes. This *Lean in Government Starter Kit—Version 4.0* is designed to assist government agencies in planning and conducting successful Lean process improvement events or projects and to make process improvement a part of their culture.

The Starter Kit contains practical tools, resources, and tips for the following:

- ➔ **Understanding what Lean is**
- ➔ **How to select a Lean project**
- ➔ **How to scope and prepare for a Lean project**
- ➔ **How to conduct and manage the phases of a Lean project**
- ➔ **How to implement follow-up activities after a Lean event or project meetings, ensure accountability, and evaluate performance**
- ➔ **How to diffuse Lean activity and become a Lean enterprise**

The Starter Kit answers questions to help agency managers determine whether Lean is right for their agencies, provides practical “how to” guidance on implementing Lean projects successfully, and presents ideas for agencies interested in expanding their Lean initiatives. The underlying goal of this Starter Kit is to provide information, tools, and resources that agencies can use to develop or incorporate into a Lean continual improvement system. Each section includes a set of downloadable resources that can be tailored to meet the specific needs of an agency.

Key Questions the Starter Kit Answers

Conducting a Lean project, such as a “kaizen” or rapid improvement event, is an eye-opening experience for agencies just getting started with Lean as well as agencies with significant Lean experience. For the purpose of this Starter Kit, we primarily refer to rapid improvement events; however, there are a variety of Lean methods that you might choose to embrace. The rapid, dramatic, and transformative improvements that many public environmental agencies have achieved using Lean along with the trend toward implementing continual improvement systems have piqued the interest of many agency managers—even in large governmental agencies. This Starter Kit addresses the following key questions about Lean in government.

How do we know if Lean is right for our organization?

Chapter 2 introduces Lean methods and how Lean relates to the plan-do-check-act continual improvement framework. It explains how Lean is different from other initiatives, and helps decision makers consider whether Lean is right for their agencies. This chapter introduces Lean and explains why agencies should consider using Lean to achieve continual improvement within their agency. The chapter also examines the five key elements that are important for sustaining long-term success with Lean.

How do we select a Lean project?

Chapter 3 provides guidance, resources, and tips for selecting a Lean project and information on how to select a Lean method. This information will help you assess the desirability of potential Lean projects by weighing strategy-driven versus pain-driven selection criteria. Information on the variety of Lean methods will help your organization select a method that is most appropriate for your improvement goals. Many types of Lean methods require skilled facilitation and guidance as well as hard work from a committed team. Chapter 3 also provides tips and resources to identify a Lean facilitator.

How do we scope and prepare for a Lean event or project?

Scoping and pre-work are critical to the success of Lean events and other types of Lean projects.

Chapter 4 provides guidance, resources, and tips for preparing for a Lean event, including team selection and planning logistics. During the scoping meeting described in this chapter, your Lean team will develop the Lean team charter, laying the groundwork for a successful project, including well-defined goals and objectives, boundary conditions, and necessary pre-work. Communication will help ensure that your project will be as successful as possible.

How do we conduct Lean events?

Chapter 5 provides guidance, resources, and tips for conducting a Lean rapid improvement event from start to finish. Although agencies do not need to use Lean events to improve their processes, they can be a particularly effective way to streamline processes in a relatively short time frame. The topics in this chapter include kicking off a Lean event, managing the phases and change during the event, and developing an implementation plan for follow-up actions.

How do we conduct follow-up after Lean events or project meetings?

Chapter 6 provides guidance, resources, and tips for conducting follow-up activities after a Lean event or for the implementation phase of a Lean project. This stage of a Lean event or project is vital to realizing and sustaining the benefits associated with the project. This chapter addresses tracking and implementing follow-up activities, internal and external communications, and how to sustain Lean improvements.

How can we diffuse Lean effectively and become a Lean enterprise?

Once your agency has completed a Lean project, it is important to think strategically about how to sustain the improvements and to effect a transformation to a culture of process improvement

throughout your agency. **Chapter 7** discusses models for deploying Lean in an organization, along with specific steps to sustaining and diffusing Lean activity and becoming a Lean enterprise.

The possibilities are exciting, whether you plan to use Lean for targeted problem-solving or to transform the culture of your agency. Whatever your path, this Starter Kit will help you get the most out of your Lean projects and activities.

CHAPTER 2. UNDERSTANDING LEAN AND THE CONTINUAL IMPROVEMENT SYSTEM

As your agency considers learning more about Lean and the continual improvement system, you will likely encounter questions from managers and staff who wish to understand why your agency is taking the time to do a Lean event or project and what that will mean for the organization. This chapter provides a brief overview of Lean methods and discusses some of these common questions and topics, including:

- What is Lean?
- Why should government agencies consider Lean?
- What is needed for long-term support of Lean?

What Is Lean?

Lean refers to a collection of principles and methods that focus on the identification and elimination of non-value added activity (waste) in any process.¹ Lean initiatives target eight common process wastes, which are often expressed using the “DOWNTIME” acronym (see table). While Lean was developed for use in the private sector to target manufacturing processes, there has been steady progress towards adapting these approaches for use on service and administrative processes.

Process Wastes Targeted by Lean (DOWNTIME)

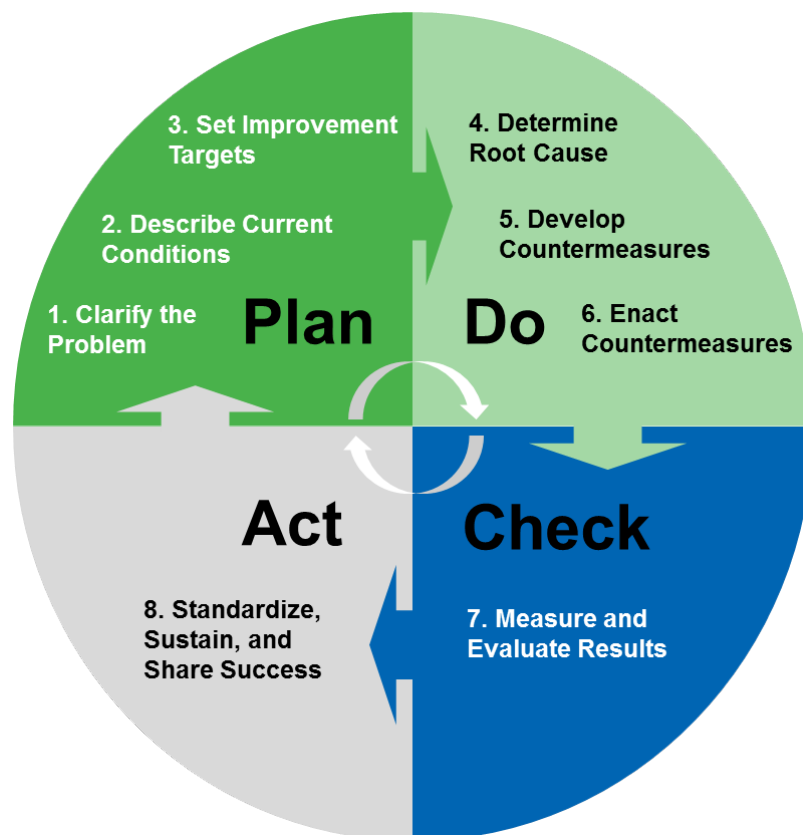
Waste	EXAMPLES
Defects	Errors in data or documents, missing information, confusing instructions
Overproduction	Unneeded reports and copies, excess email messages, doing work not requested
Waiting	Waiting for data, decisions, reviews, or approvals
Not utilizing knowledge/skills	Under-utilizing employee skills, ideas, and creativity; lack of teamwork
Transportation	Non-essential transport of documents, report routing for signatures
Inventory	Backlog of work (permits, plan approvals, etc.), excess materials/info, obsolete files
Motion	Unnecessary movement to find files, data, or supplies; travel
Excess processing	Unnecessary process steps, planned or unplanned rework, too many approvals

¹ James Womack, Daniel Jones, and Daniel Roos coined the term “lean” in their 1990 book *The Machine that Changed the World* to describe the manufacturing paradigm (often referred to as the Toyota Production System) developed by the Toyota Motor Company based on principles pioneered by Henry Ford.

Public sector interest in Lean is increasing rapidly, fueled by strong improvement results and in some cases, economic hardship. It is often said that Lean is “common sense uncommonly applied.” **Six Sigma** is often used with Lean, but is a distinct methodology that uses a collection of statistical tools to analyze causes of variation in a process and to identify and test improvements.

The foundation of Lean is a “Plan-Do-Check-Act” (or “Plan-Do-Study-Act”) problem-solving framework for continual improvement that was originally conceived by Dr. W. Edwards Deming. This PDCA framework is relevant whether a Lean project team is planning, executing, and following up from a Lean rapid improvement event or project, or whether employees are working to continually improve their individual work activities.

Plan-Do-Check-Act Problem-Solving Framework



As shown in the Figure above, the PDCA framework is often combined with the following eight steps for Lean problem-solving:

1. **Clarify the Problem.** Identify key problems with the current process as experienced by customers, managers, and/or staff.
2. **Describe Current Conditions.** Measure and document the current performance of the process along key dimensions such as time, quality, and customer satisfaction. In Lean projects, current conditions are often depicted in a current state process map.
3. **Set Improvement Targets.** Determine specific, measurable objectives for how your Lean project will improve the current conditions of a process.
4. **Determine Root Causes.** Research the underlying causes of problems. Useful techniques for uncovering root causes include asking “why” five times and “fishbone” cause-effect diagrams.
5. **Develop Countermeasures and Implementation Plan.** Identify actions (or “counter measures” to counteract current activities) to address root causes of problems and improve the process. Develop an implementation plan for enacting, evaluating, and sustaining process improvements.
6. **Enact Countermeasures.** Carry out the actions in the implementation plan, track progress with implementation, and identify additional countermeasures if needed to get back on track.
7. **Measure and Evaluate Results.** Measure process performance data and compare performance against the target conditions. Report results and adjust implementation efforts if needed.
8. **Standardize, Sustain, and Share Success.** Make the improved process the new “business as usual” using standard work (easy-to-use standardized procedures). Share transferable solutions with peers who could benefit from them. Sustain and improve on the solutions over time.

These steps overlap, support each other, and are repeated in Lean through individual and team-based process improvement efforts. Throughout the remainder of this Starter Kit, you will see small versions of the PDCA framework to indicate which sections of the framework apply in each chapter.

KEY PRINCIPLES THAT DISTINGUISH LEAN FROM OTHER IMPROVEMENT EFFORTS

Lean is different from other improvement efforts in several key ways. Lean:

- Creates value in the eyes of the customer, taking a “customer service” perspective that seeks to optimize value delivered to the environment, the public, and the regulated community
- Empowers people in the organization, involving employees and external stakeholders in continual improvements and problem-solving activities
- Deploys a rapid, continual-improvement framework that emphasizes implementation rather than prolonged planning
- Maximizes flow and pull, eliminating obstacles such as waiting
- Organizes processes around value streams, seeking to reduce the complexity of processes
- Continuously pursues perfection using metrics and visual controls to provide rapid feedback to improve real-time decision-making and problem-solving

By eliminating non-value added activities, environmental agencies can redirect staff time to higher-priority activities related to their core mission of environmental protection.

What Methods Are Used in Lean?

Value stream mapping and rapid improvement events (kaizen events) are the Lean methods most commonly used by agencies getting started with Lean. Many additional methods, such as 5S, standard work, and visual controls, help employees to maintain and continue to improve processes in between Lean events. The “how to” guidance on implementing Lean projects in Chapters 3-6 focuses on rapid improvement events, although many of the recommendations and tips are transferable to other types of process improvement projects. Some common Lean and Six Sigma process improvement methods are described below.

Event or Project-Based Methods

- **Value Stream Mapping (VSM):** Value stream mapping refers to the activity of developing a high-level visual representation, from start to finish, of the process flow involved in delivering a desired outcome, service, or product (a “value stream”) to customers. VSM is a strategic method for prioritizing improvement opportunities, and is generally followed by implementation activities such as rapid improvement events. In the context of environmental agencies, a value stream could be the process of enabling redevelopment of brownfield sites or attracting and hiring agency staff. VSM events typically last two to five days depending on the complexity of the process being mapped.
- **Rapid Improvement Events:** Rapid improvement events—also called kaizen events—focus on eliminating waste in a target process, improving productivity, and achieving sustained improvement. Rapid improvement events can be as short as one or two days, but they often last about five days. They are a key implementation method for Lean, aside from “just do it” actions, which are changes that can be made on the spot to improve processes and don’t require team participation.

REALIZE THE FULL POTENTIAL OF RAPID IMPROVEMENT EVENTS

Rapid improvement events are meant to be places where implementation happens (e.g., creating the templates that will be used in the new process). In practice, however, this sometimes can be a challenge – project teams may find it easier to just focus on planning during events. Keep in mind that without making changes to the process during the event, your project team will face a more challenging time with follow-up work after the event to achieve your team’s goals.

- **Six Sigma:** Six Sigma is often used with Lean, but is a distinct methodology that uses a collection of statistical tools to analyze causes of variation in a process and to identify and test improvements. Trained Six Sigma experts, called “black belts” and “green belts,” support teams in using Six Sigma tools in a project context. While this Starter Kit does not focus on Six Sigma, Lean and Six Sigma methods can be effectively combined (often called “Lean Six Sigma”). Lean eliminates unnecessary time and wastes, while Six Sigma targets improvements to product or service quality and process variation.

Methods to Eliminate Waste in Everyday Activities

- **5S:** 5S is an improvement process involving five steps (Sort, Set in order, Shine, Standardize, and Sustain) to create and maintain a clean, neat, and orderly workplace. 5S is often used to ready the workplace for future continual improvement efforts. Some organizations add a sixth “S” for Safety.
- **Standard Work:** Standard work represents the optimum sequence of activities needed to perform a given operation. Improvements made during rapid improvement events are documented as standard work to ensure employees understand and consistently implement the new process.
- **Visual Controls:** Visual controls are used to reinforce standardized procedures and display the status of an activity so every employee can see it and take appropriate action. Visual controls are often instated during rapid improvement events to simplify work areas and provide feedback on process performance.
- **Process Walk:** Process walks are done by a team of employees who walk through a work area to look for wastes and then implement actions to immediately improve the process. By learning to identify inefficiencies and problem solve in their working environment, employees gain skills and habits necessary to incorporate Lean thinking into their everyday work.

More detailed information on these and other Lean methods can be found in Chapter 3 and in EPA’s [Lean Government Methods Guide](#).

HOW TO LEARN MORE ABOUT LEAN

- Visit EPA's Lean website (www.epa.gov/lean) for more information about Lean, resources on specific aspects of Lean implementation, and case studies on EPA and state agency Lean projects.
- Consult the bibliography (Appendix A) of this Starter Kit for a list of references and websites geared towards agencies interested in learning more about Lean principles and methods.
- Talk to other agencies implementing Lean. Agencies are generally excited to share their experiences and can be helpful resources for agencies considering Lean.

Why Should Government Agencies Consider Lean?

While Lean originated in manufacturing, it quickly spread to the service sector and to address administrative and office systems. In the early 2000s, a handful of federal, state, and local government agencies in the U.S. saw the relevance and power of Lean and began applying Lean in government. Since then, Lean implementation has grown dramatically in the government sector.² Increasingly, Lean has provided an alternative path to navigating tough budget pressures and customer service demands experienced by many public agencies. Instead of focusing on hiring freezes, program cuts, travel restrictions and delayed investment, some agencies are using Lean to look closely at processes, operations, and systems—the work itself—to do more, better, with less time, resources, and hassle.

So why is Lean so promising for improving government? Ken Miller, the author of *We Don't Make Widgets: Overcoming the Myths That Keep Government from Radically Improving*, has written about three reasons:³

1. **Lean focuses on operations.** The whole point of Lean is to rethink the way we produce what we produce, to increase our capacity to provide value to those we serve. Lean recognizes that inefficiency resides in our systems and our operations—the way we have designed our work. Lean is not another planning model, measurement method, or accountability system. Lean is not a pithy slogan or something you tell employees to do. Lean actually focuses on the work of the agency.
2. **Lean has a measurable impact on time, capacity, and customer satisfaction.** That is, it actually works. Lean projects produce amazing results, and they are often completed in as few as five days.
3. **Lean involves employees.** Specifically, the employees who work within the process or system being improved. Government agencies have tried employee involvement before, with suggestion programs, quality teams, and so forth. While the intent of those programs was good, the focus was too small. Employees may be able to suggest ways to improve their own performance, or the piece of the process they're involved in. But systems cut across silos. Most employees can only see a part of the whole system. Therefore, what might help them personally be more productive could actually hinder the larger system.

² See EPA's Lean Government website for information on how Lean is being applied by EPA and state environmental agencies.

³ The three reasons are quoted from the following article: Ken Miller, "Lean Government's Promise of Going 'Lean'," *Governing*. May 21, 2009, www.governing.com/blogs/public-great/lean-government.html.

Lean projects, on the other hand, involve all the key players in a system (including the “customers”) to analyze and improve the whole system.

Government agencies have numerous “processes” that produce “products”—including regulations, guidance memos, reports, grants, workshops, inspections, travel authorizations, employee benefits processes, mail delivery, and on and on. All of these processes have work flows waiting for improvement. Therein lays the promise of Lean.

At the same time, there are barriers that limit Lean’s success in government. The textbox below highlights some important barriers to consider. In addition, numerous ideas, tips, and cautions are included throughout this Starter Kit to help overcome these and other obstacles to success. While barriers and challenges exist, experiences with Lean in government over the past decade paint a compelling picture of the value of moving forward with Lean.

OVERCOMING BARRIERS TO LEAN’S SUCCESS IN GOVERNMENT

Numerous quality and process improvement fads such as TQM, quality circles, and reengineering have come and gone in government. Many in government are beginning to see the power of Lean thinking for driving excellence in government programs and processes. They see Lean’s potential for being more than a passing fad. How can the fate of being considered a fad be avoided? Here are some barriers that must be overcome:

- **The industrial jargon of Lean is a turn-off.** Lean will only thrive if people in government believe the concepts and methods apply to them. We have a ways to go in helping government managers and staff members to see the relevance and power of Lean without experiencing it firsthand. Consider ways to minimize the use of jargon and the desire to develop names and acronyms for improvement efforts (e.g., you may want to use the term “rapid improvement event” [RIE] instead of kaizen event).
- **Government managers often aren’t focused on the details of operations and work processes.** Many government leaders and managers didn’t join government to manage. Instead, they are driven by a deep desire to address an issue or solve a problem. They get excited about bold new programs and solving big problems—not about making operations and processes hum. But the key to results in government is a combination of innovative policy and improving the performance of operations. Effort is needed to uncover and celebrate the value of improving operations—the work that gets done day in, day out. Plus, eliminating non-value added activity (“waste”) gives everyone more time to focus on your agency’s highest priorities and new initiatives.
- **The emphasis of Lean may seem like it’s on the wrong thing.** Much of the current focus of Lean is on reducing waste, including process inefficiency and complexity. The real challenge facing many government agencies is capacity—having enough resources to keep up with ever-expanding and ever-more complex workloads and challenges. Lean needs to be presented in a way that emphasizes its ability to increase our capacity to do more good. It can thus be a vehicle for process improvement and increased capacity, even in the face of declining resources. (It is important to make a commitment that no one will lose their jobs due to process improvement activities, or no one will want to participate.)

Source: Adapted from Ken Miller, “Lean Government’s Promise of Going ‘Lean,’” *Governing*. 21 May 2009, www.governing.com/blogs/public-great/lean-government.html

What Are Benefits of Lean?

Lean can dramatically improve the performance and effectiveness of agency processes in a relatively short timeframe (see the textbox below for a list of typical benefits). The impressive results from environmental agency Lean efforts also speak for themselves. Here are a few examples of how EPA and state environmental agencies have used Lean projects to design more efficient processes:

- **EPA Regions 3 and 7** collaborated with state representatives to streamline the Resource Conservation and Recovery Act (RCRA) corrective action process.⁴ They developed a new approach that is anticipated to reduce the time to investigate facilities from 10-20 years to only five years, and the time to decide on cleanup actions from 6 years to 1-2 years. The improvements are projected to result in projects making through the active pipeline 73 percent faster than they did before the project. Based on the success of that Lean effort, other EPA Regions and States across the country are adopting this new, streamlined approach to RCRA corrective action.
- **Wisconsin Department of Natural Resources** held a project on its Environmental Performance Partnership Agreements process, and identified improvements that are anticipated to reduce lead time by 27 percent and repurpose 150 staff hours.
- **New Hampshire Department of Environmental Services'** Air Resources Division used Lean tools to streamline the inspection report process.⁵ The improvements are anticipated to reduce reporting time from 62 to 20 days, a 68 percent reduction. They created new standard work to ensure consistency, and identified future opportunities for more improvement projects.
- **EPA Region 6** decreased the total processing time for its Pesticide Enforcement Case Resolution process from 455 days to 216 days (a 53 percent reduction).⁶ EPA focused on eliminating non-value added time to increase EPA's ability to close enforcement actions, and thereby increasing responsiveness to the public and decreasing the risk to human health and the environment.
- **Iowa Department of Natural Resources** streamlined the corrective action process activities in its Leaking Underground Storage Tank program, reducing the number of decisions by 80 percent and the number of process steps from 43 to 26 (a 40 percent reduction). These improvements promise to drop the average decision-making timeframe from 38 months to 3 months.
- **Several EPA Offices and Regions—including Region 5, Region 7, and the Office of Administration and Resource Management in Research Triangle Park (OARM-RTP)**—have streamlined and expedited the closeout process for employees leaving the agency. The improvements reduced steps in the process by 56% (from 146 to 82) by consolidating required signatures, minimizing in-person visits, and developing better instructions.
- **Vermont Agency of Natural Resources** decreased the time needed to process an on-site wastewater permit from as high as 542 days to 34 days (a 94 percent reduction) with the new process design, and cut the number of steps in the permitting process from 150 to 38.⁷

⁴ For more information, see the EPA Region 3 and Region 7 RCRA Corrective Action Facility Investigation Process case study: <https://www.epa.gov/lean/epa-region-3-and-region-7-rcra-corrective-action-facility-investigation-process-lean-event-case>

⁵ For more information, see the New Hampshire Department of Environmental Services Streamline Stationary Source Inspection Report Preparation case study: <http://des.nh.gov/organization/commissioner/lean/documents/20121026-ard-insp-report.pdf>

⁶ For more information, see the EPA Region 6 Pesticides Enforcement Resolution Process Lean Event case study:

<https://www.epa.gov/lean/epa-region-6-pesticide-enforcement-case-resolution-lean-event-case-study>

⁷ For more information, see the State of Vermont Wastewater Permit Process Kaizen Event case study: <https://www.epa.gov/lean/state-vermont-wastewater-permit-process-kaizen-event-case-study>

These agencies achieved these results by using value stream mapping, rapid improvement events, and other Lean methods. For more information and case studies about EPA and state Lean activity, see EPA's Lean website (www.epa.gov/lean).

BENEFITS OF LEAN

By using Lean tools and applying Lean thinking, an agency can expect to:

- Eliminate or dramatically reduce backlogs
- Reduce the total time it takes to complete a process by more than 50 percent
- Decrease the complexity of processes and eliminate unneeded process steps
- Improve the quality and consistency of work products and activities
- Allocate more staff time to "mission critical" work
- Improve staff morale
- Enhance process transparency to internal and external audiences

The table below shows examples of how environmental agencies have used Lean projects to develop more efficient air permitting processes.

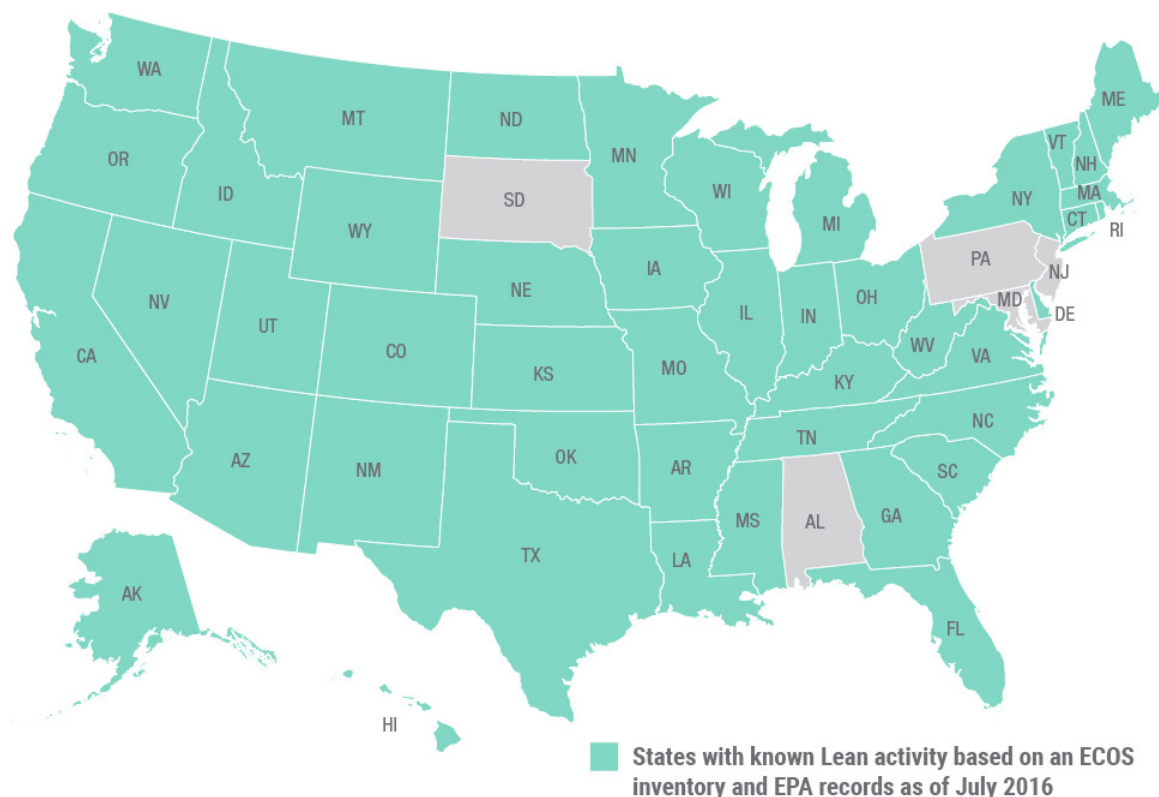
Anticipated Improvements in Air Permitting Timeframes Resulting from Lean Projects

STATE AGENCY	SPECIFIC AIR PERMITTING PROCESS	PERMITTING TIMEFRAME BEFORE LEAN PROJECT (IN DAYS)	PERMITTING TIMEFRAME AFTER LEAN PROJECT (IN DAYS)	DECREASE
Idaho Department of Environmental Quality	Permit to construct	270	97	64%
Indiana Department of Environmental Management	Title V permit modifications	164	144	12%
Iowa Department of Natural Resources	Standard air quality construction permits	62	6	90%
Iowa Department of Natural Resources	Air quality complex permits	214	180	16%
Michigan Department of Environmental Quality	Major air construction permits	422	98	77%
Michigan Department of Environmental Quality	Minor air construction permits	143	50	65%

Using Lean to achieve process excellence is a growing trend among government agencies, including those focused on environmental protection. EPA's 2006 Lean government primer, *Working Smart for Environmental Protection*, looked in depth at the Lean experiences of five state environmental agencies,

all of which have continued with Lean implementation efforts. But those were just the initial pioneers of Lean at state environmental agencies! As of July 2016, there were about 45 states whose environmental agencies have conducted Lean events or projects, as shown in the map below.

Lean at State Environmental Agencies



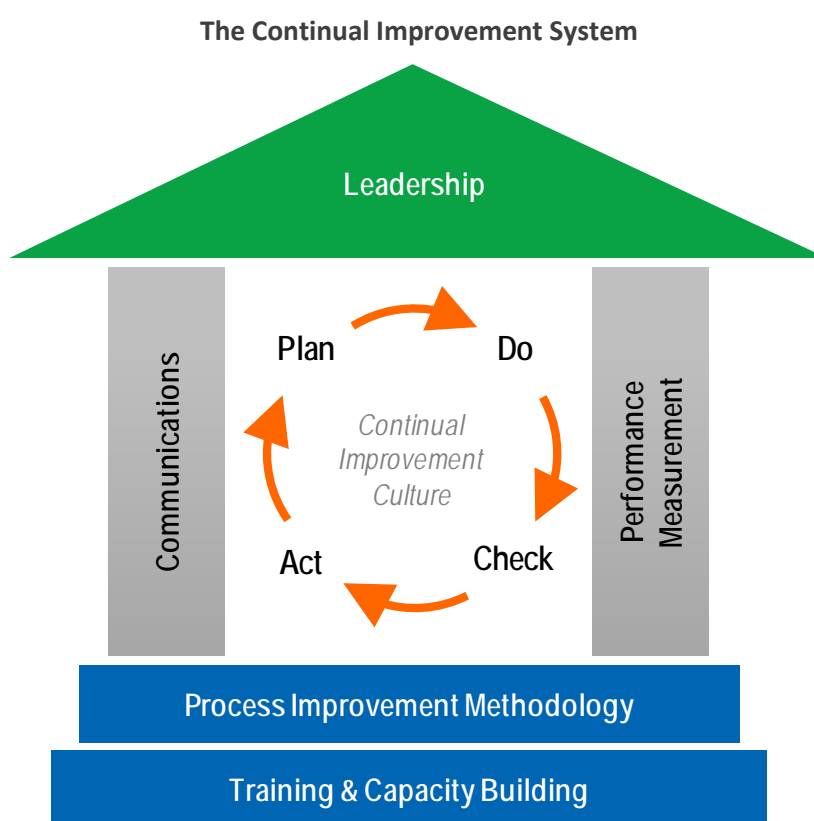
Lean efforts have also taken off at EPA, other federal agencies, and in many local jurisdictions.⁸ EPA has conducted over 200 Lean projects at EPA headquarters and in regional offices around the country, including several joint efforts between regional offices and state agencies. There is a large network of over 30 federal agencies implementing Lean, and several federal agencies have established substantial process improvement efforts. The U.S. Department of Defense (including the Air Force, Army, Navy, and other agencies), for example, has conducted *thousands* of Lean and Six Sigma projects. Local government agencies, including energy and water utilities, have launched successful Lean programs as well. These improvements can translate into real environmental results. For example, JEA, an electric, water, and sewer utility in Northeast Florida, used Lean Six Sigma methods to reduce nitrogen discharges from a wastewater treatment plant by 74 tons per year, meet regulatory requirements two years ahead of schedule, and avoid the need to invest in costly plant upgrades.⁹

⁸ See <http://leangovcenter.com/govweb.htm> as well as http://en.wikipedia.org/wiki/Lean_Government for links to federal, state, and local government agency Lean websites. EPA's Lean website, www.epa.gov/lean, also includes case studies of several EPA and state Lean projects.

⁹ For this and other examples of how water sector utilities have used Lean and Six Sigma to improve their performance, see: U.S. EPA, *Resource Guide to Effective Utility Management and Lean*, October 2012, <https://www.epa.gov/sites/production/files/2016-01/documents/eum-and-lean-resource-guide.pdf>.

What Is Needed for Long-Term Success with Lean?

This Starter Kit is designed to help you effectively plan for and implement Lean methods—such as rapid improvement and value stream mapping events—thereby reducing process time and complexity, improving customer service, and making more time for high-priority activities. Whether you are considering conducting one or a hundred projects at your organization, there are several key activities that will help ensure that your Lean efforts yield the best results over time. Successful process improvement efforts, including Lean government transformations, involve five key elements: leadership, process improvement methodology, communications, performance measurement, and training and capacity building. These five elements collectively support the development of a continuous improvement culture. The relationship of these elements is shown in the Continual Improvement System “House” diagram below.



Leadership

The involvement and commitment of leaders and senior managers is the most important factor in the long-term success of Lean process improvement efforts. Supportive and engaged leaders can inspire the confidence and enthusiasm of others who are necessary to making improvements become a reality. Leadership support is essential for enabling the success of both individual Lean improvement projects and your agency’s

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Lean Leadership Guide

overall process improvement initiative. A Lean leader should take several critical steps, listed below, to support Lean process improvement initiatives and to actively engage with Lean teams before, during, and following Lean events or project meetings. The Lean Leadership Guide (see resource) has specific examples of what leaders can do in each of these steps. For example, a Lean project sponsor can play a key role in enabling the success of an event clearly articulating a vision of success, detailing what goals the improved process should accomplish, and empowering the team to develop approaches to achieve those goals. Lean leaders play an important role in removing barriers to change.

CRITICAL STEPS FOR LEADERSHIP

- | | |
|--|---|
| 1. Choose where to focus improvement efforts | 5. Provide visible support for Lean efforts |
| 2. Define process excellence and set clear goals | 6. Monitor progress and hold people accountable |
| 3. Actively participate in Lean projects | 7. Clear obstacles to successful implementation |
| 4. Assign staff and resources | 8. Recognize and celebrate accomplishments |

Process Improvement Methodology

Effective process improvement initiatives rely on a clear and structured problem-solving approach that employees at all levels can use and embrace. As noted earlier, Lean and Six Sigma are based on the Plan-Do-Check-Act continual improvement cycle developed by Dr. W. Edwards Deming. They include tools to help employees understand what the standard process is, identify when deviations occur, and then make changes to get back on course. Chapters 3–6 of this Starter Kit are a “how to” guide for implementing Lean events—a powerful way to put the Plan-Do-Check-Act cycle into practice with a burst of ongoing concentrated activity over a short period. Through Lean events or other project meetings, your team will:

- **Plan:** Set process improvement goals and objectives, analyze your current process as it actually operates, identify root causes of problems, and design a new and improved process.
- **Do:** Identify and implement process changes to reduce process complexity, increase efficiency, and improve environmental results.
- **Check:** Monitor and evaluate implementation efforts and process performance to determine whether your efforts are on course.
- **Act:** Standardize and sustain successful process improvements, share transferable solutions, and conduct additional Lean events or other activities to drive further improvements.

This Starter Kit focuses primarily on rapid improvement events; however, there is a range of Lean, Six Sigma, and other methods that can support your agency’s process improvement efforts. Some of these methods can be implemented during a Lean event, while others may be implemented as part of daily work practices. See chapter 3 for more information about business process improvement methods.

Communications

As with any new change initiative, an effective communications strategy can make the difference between something that falters and something that takes root and grows. Without consistent supportive messages from leadership, Lean efforts are not likely to succeed. Especially during early stages of Lean implementation, people may have a lot of questions and misconceptions about what Lean is, why the agency is using it, and what it means for their work. Use the *Frequently Asked Questions About Lean* document (see resource) to support your Lean efforts and address common questions agency staff and stakeholders may have. Internal and external communications are a critical aspect of effectively conducting Lean events or projects. Chapter 4 provides additional guidance on communications activities leading up to Lean events, and Chapter 6 offers recommendations and tips for post-event communications with internal and external audiences.

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Frequently Asked Questions About Lean

Performance Measurement

The Lean production system is built around close attention to performance measurement. This includes key dimensions of value relevant to the customer such as time (e.g., how long it takes to get a permit application processed), quality (e.g., whether there are errors or omissions in a document), and cost (e.g., how much staff time and agency resources are used). The *Lean Government Metrics Guide* (see resource) and the metrics discussion in Chapter 4 have more information about the types of metrics used in Lean efforts.

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Lean Government Metrics Guide

Lean Metrics Checklist

Much of the value of Lean process improvement projects comes from delving deep into the way that processes actually work, analyzing performance data for the process using key metrics, and charting a course for improvements based on the team's collective understanding of that real-world data. The estimated performance gains that the new process will yield then serve as targets for implementation activities. Agencies with more established Lean programs should consider what kind of consistent performance measurement, tracking, and reporting system for Lean implementation efforts makes sense for their culture and needs. Providing a common framework for reporting on Lean success stories and implementation efforts can be incredibly useful for promoting process improvement efforts and ensuring accountability for results. The *Lean Metrics Checklist* (see resource) outlines when to consider performance metrics in the context of Lean projects.

Training and Capacity Building

Training and capacity building are important foundations for sustainable process improvement programs and key to fostering a continual-improvement culture within an organization. However, as with many aspects of Lean, training should have an applied, value-added focus. Many organizations starting out with Lean or Six Sigma falsely assume that they need to do a lot of training before beginning process improvement activities. Unlike TQM, which places a heavy emphasis on training as a mechanism for process improvement, Lean is primarily a "learn by doing" approach. For this reason, many Lean courses incorporate simulation exercises to give participants a sense of how Lean concepts and tools

work in practice. Similarly, Lean and Six Sigma certification programs generally involve a combination of coursework and requirements for participants to complete improvement projects at their organizations.

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EPA Continuous Process Improvement Training Strategy

For many Lean project participants, their primary Lean training is provided on day 1 of the Lean event or project (this is sometimes called “just in time” training), to prepare them to engage in the process improvement activities during the remainder of the event or project. A large component of your organization’s Lean training may come as a “byproduct” of conducting rapid improvement events and generating process improvement results! By immediately applying the knowledge learned in just-in-time training in the context of an actual project, participants can quickly achieve a basic level of proficiency in understanding and conducting Lean tools.

When deciding what Lean training is appropriate for your agency, it is important to consider the goals of your effort. In general, there are at least four goals for education and training efforts:

- **Inform and Engage.** For your Lean initiative to be successful, it is critical for people in your agency and other important stakeholders to understand what Lean is and why it is important. One category of education and training, therefore, focuses on explaining what Lean is, how it relates to environmental agencies, and helps build the case for “What’s in it for me?” to managers who may be considering using Lean to improve their processes.
- **Coach.** Prior to Lean events or projects, it is helpful to educate and coach key participants, including the sponsor, the team leader, and any other important decision makers who will be involved on what happens at different stages of the project (such as before, during, and after a Lean event), and how they are expected to participate during each stage. If your agency is using an outside consultant facilitator, be sure the facilitator knows your expectations for the project, including the scope, desired approach, briefings and report-out presentation, and follow-up plans, and clearly delineate the division of roles and responsibilities between the team leader and facilitator. Use this Starter Kit as a guide and resource for coaching presentations and discussions.
- **Enable.** Another key training objective is to provide the skills and knowledge that people need to effectively participate in Lean events, project meetings, and implementation activities. Training for Lean event participants focuses on Lean methods and principles, and is typically done (at least as a refresher) on the first day of an event. If your project will use a traditional project meeting structure, you may want to train participants on any Lean tools they will use on the first project meeting, or on an as-needed basis. Following a Lean event or project meetings, new process-specific training is needed to educate staff on the new process and any standard work that the team developed, and enable everyone involved in the process to work together towards successful implementation.
- **Build Capacity.** While relying on external consultants to provide Lean facilitation can be a valuable strategy for rapidly generating process improvements initially, there are advantages to developing in-house capacity for Lean facilitation and training. In addition, it is useful to build the capacity of staff to problem-solve and identify inefficiencies as part of their daily work practices. This allows process improvements to occur regularly and not wait for external consultants to conduct a rapid improvement event. Successfully conducting Lean events and other process improvement activities depends not only on the “technical” knowledge of Lean

methods, but also softer skills such as project and process management, change management, and effective team dynamics.

EPA'S CONTINUOUS PROCESS IMPROVEMENT TRAINING STRATEGY

EPA's strategy for training and building capacity for staff to be effective continuous process improvement or Lean practitioners involves three components:

- **Body of Knowledge:** Coursework to develop an understanding of Lean concepts and tools
- **Body of Experience:** Application of Lean practices (i.e., lead at least one EPA Lean project) and demonstration of results
- **Continuous Learning:** Coaching, mentoring, and training on advanced or specialized skills

For additional details, see the document, ["Lean Continuous Process Improvement Training Strategy and Capacity Building Efforts at EPA."](#)

If you are just beginning with Lean, you may not need much more than an orientation to Lean concepts and the just-in-time training that a Lean facilitator provides during a Lean project. However, if you've decided to embark on a broader, process improvement initiative, you may want to train some staff to become continual improvement coordinators. Many environmental agencies began their Lean efforts by relying heavily on external consultants as Lean facilitators, but over time have shifted towards in-house facilitation of Lean projects and using consultants only for strategic guidance or for facilitating particularly complicated or contentious projects. Chapter 7 discusses steps, including training, for building a Lean enterprise and diffusing Lean activity within your agency.

The next several chapters discuss how to select, plan, and conduct Lean process improvement projects, as well as how to implement follow-up activities effectively.

CHAPTER 3. SELECTING A LEAN PROJECT



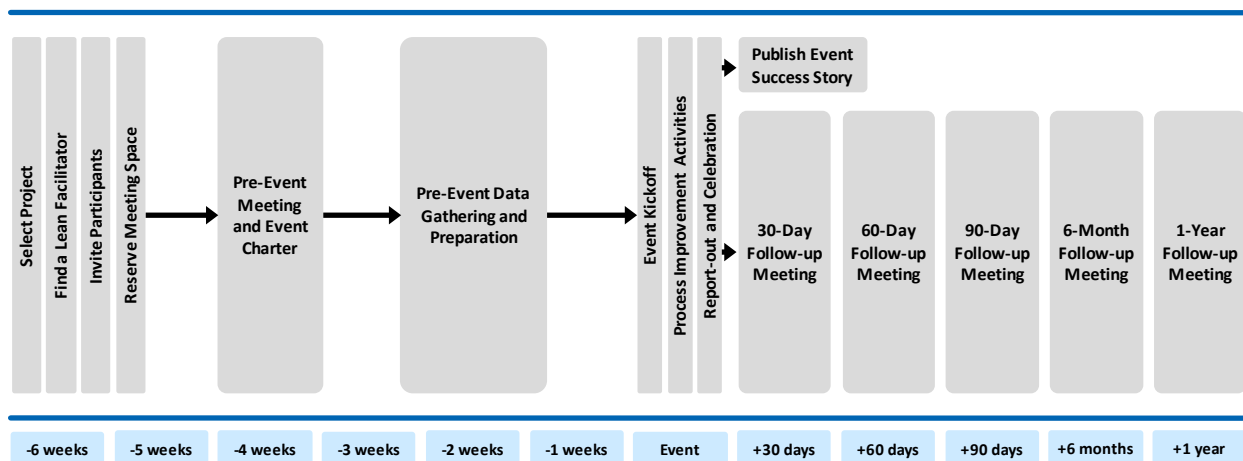
This chapter provides advice on the first steps to take when planning a successful Lean project: selecting a Lean project, choosing a Lean method, and locating facilitation assistance for your Lean effort. Chapters 4 and 5 then describe the scoping and preparation you should do to help ensure that your project will be a success, and provide information on conducting the project. Chapter 6 discusses follow up after the project to ensure effective implementation of the process improvements identified by the team.

STEPS FOR SELECTING A LEAN PROJECT

- ➔ Determine the Project Focus
- ➔ Choose a Lean Method
- ➔ Identify a Lean Facilitator

Most agencies begin their Lean implementation efforts with a pilot project to improve an existing agency process. The diagram below shows the steps that your organization should take in the weeks leading up to, and the months following, a Lean rapid improvement event. By following this timeline, you can be sure to be well-prepared prior to a Lean event, and ready to stay on-track with implementation of process changes during the important period following the event.

Lean Event Planning Timeline



Rapid improvement events can be a very powerful approach for improving processes through focused team-based activity, but they are not the only way to realize efficiency and quality gains. Government agencies have also modified this approach by splitting events into parts, using more traditional project meeting structure (shorter meetings occurring over a longer time frame), or implementing other

methods outside of events. This Starter Kit focuses on rapid improvement events, but many of the tips and resources are relevant to other process improvement approaches.

Determine the Project Focus

This section lists the steps you should take to select a Lean process improvement project. Select a process to target for improvement during your Lean project prior to the scoping meeting (typically held four to six weeks before an event). This is an essential step in the “Plan” phase of the PDCA framework. More information about the steps to take when selecting and scoping your project is available in the [Lean Government Event Scoping Guide](#).

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[Lean Government Event Scoping Guide](#)

List Potential Processes to Target

If this is your agency’s first project, it may be useful to start with a relatively simple process (e.g., air construction permitting for minor sources or a permit modification process) or an internal process that does not directly interface with external parties (e.g., audit action tracking), to get a feel for Lean methods. The selected process should be sufficiently important to capture organizational attention, but not so complex as to make progress difficult through a single project. It is critical to start with a process area where there is a high level of management support and commitment to ensuring a successful Lean project. However, other circumstances may dictate which process is the best candidate for a Lean project. For example, it may make sense to initiate the Lean project in conjunction with another major change within the agency during the implementation of a new rule or major staffing changes.

Most agencies select a process to target in a Lean project while guided by either strategy or “pain”—that is, the greatest perceived problems. Examples of strategy-driven and pain-driven selection factors agencies use to identify projects include the following.

Strategy-driven process selection factors:

- New initiatives
- Regulatory programs
- Degree of criticality to agency mission

Pain-driven process selection factors:

- Backlogs and amount of work in progress (WIP)
- Administrative bottlenecks and delays
- Customer and staff complaints
- Funding concerns

Use either approach (strategy or pain), or a blend of both, to generate a list of potential processes, and try to identify the purpose of each potential project (e.g., reduce lead times, improve quality, or eliminate rework). In many organizations, it makes sense to initially conduct some pain-driven projects, and then evolve to selecting projects that are linked to the agency's strategic plan and goals.

Clarify the Problem

As you select your process to improve, it is important to have a clear sense of why you want to make changes. For example, your agency may want to issue permits or complete inspection reports more quickly, eliminate backlogs, reduce errors, or address other concerns that managers, staff, customers, or stakeholders may have. Clarifying the problem you would like to solve will help ensure that you choose and implement the most appropriate solutions. Understanding the problem can have several components:

- **Define the Process:** Most problems are related to processes, not people. To focus your efforts, be clear on what process you are trying to improve.
- **Identify Key Issues:** It is useful to have a high-level understanding of key issues to address. Will your improvement project focus on reducing process time, improving process quality, simplifying the process, improving staff communications, or something else?

The amount of time you need to spend understanding the problem before addressing it will vary considerably depending on the problem.

Assess Project Desirability

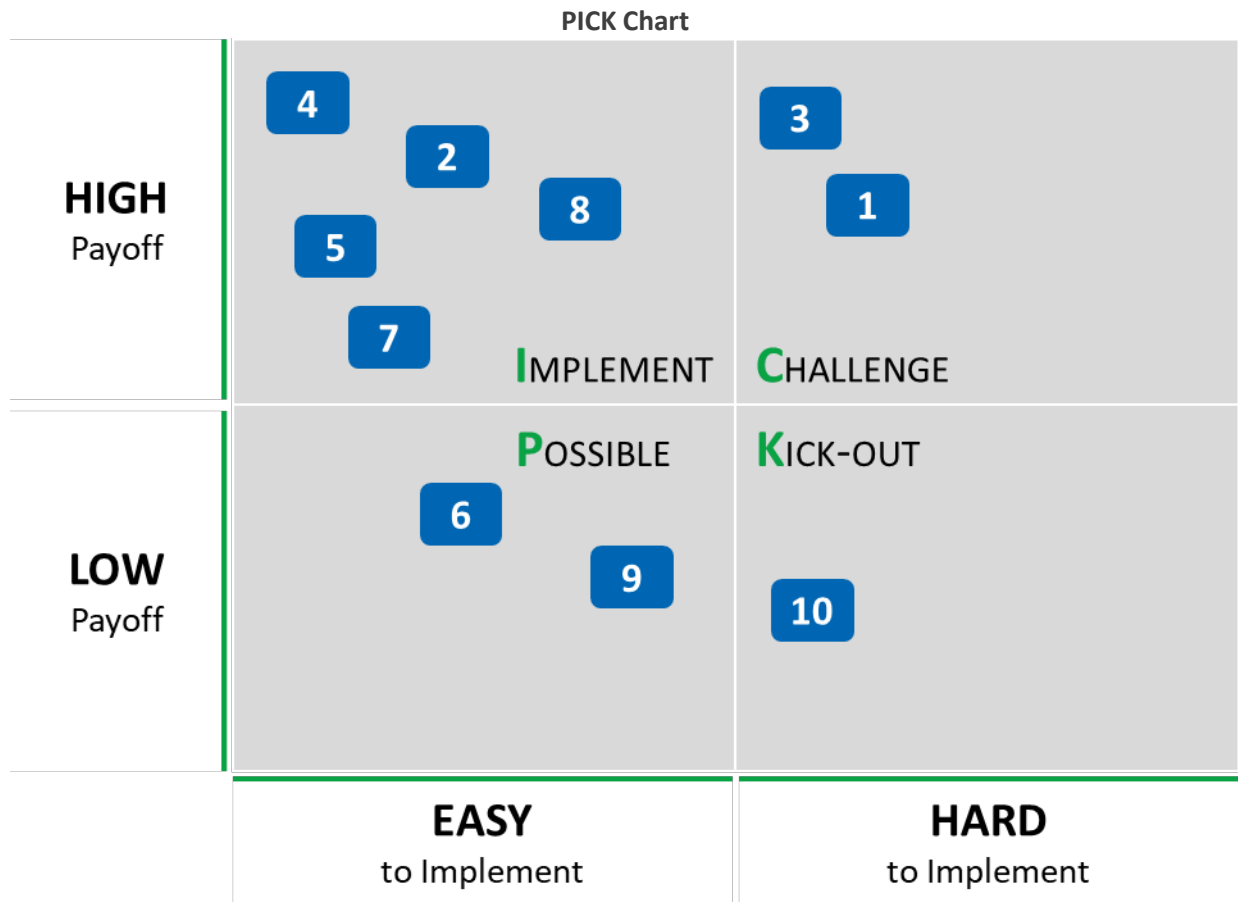
The next step in project selection is to assess the processes you've listed to determine which ones would best be addressed in a Lean project. Consider the following factors in ranking project desirability.

- **Impact:** This factor refers to the value, or payoff, that potential improvements will likely have for the organization or its stakeholders. This value could be considered in terms of environmental outcomes, service quality, or cost-effectiveness, among others.
- **Difficulty:** This factor captures the amount of time and resources that will likely need to be devoted to the Lean project, including implementation, in order to realize value, and the probability that the improvements will succeed. Complex processes and well-established processes may require a high level of effort to change. Reflect on the various risk factors that may affect the likelihood that you will be able to successfully implement the improvements.

Rate potential projects based on these criteria, and then plot them on a PICK chart. A PICK chart helps a team organize and prioritize its recommended process improvements by separating them into four quadrants:

- **P – Possible.** Easy to implement but with a small impact. These could be considered as possible ideas but not a high priority.
- **I – Implement.** Easy to implement and with a high impact. You should implement these changes first if possible.

- C – Challenging. Difficult to implement but with a high impact. You may want to pursue some of these, but know that they will require a lot of work.
- K – Kick out. Do not consider ideas that are both hard to implement and have a small payoff.

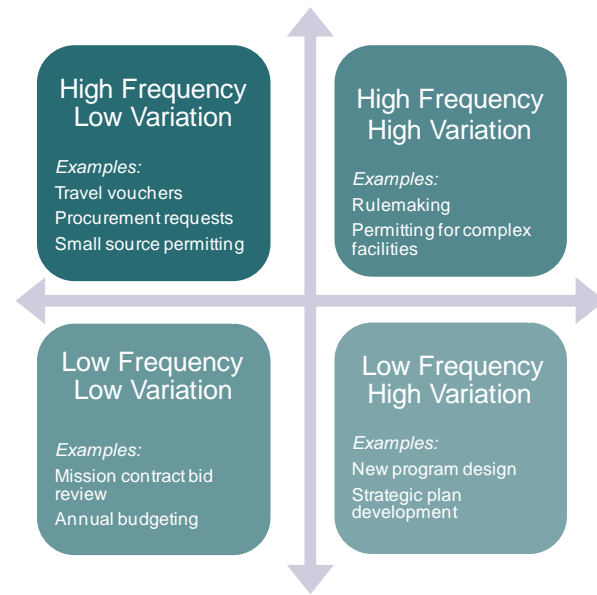


The type of government process may influence the desirability for investing in process improvements. For example, some processes may require substantial effort to improve and the improvements may contribute little value to the organization and its ability to achieve its mission. While all processes can benefit from Lean, the types of Lean results—time, quality, and cost—can vary depending on the type of process that is targeted. Quick, impressive results are often important for building organizational support and momentum, while freeing resources and time to focus on more mission-critical work. While applying Lean to more complex processes may not yield quick time and cost savings, sustained focus on Leaning complex processes may yield dramatic improvements in the agency’s ability to achieve its mission. The textbox below discusses how different government process types can affect Lean results.

GOVERNMENT PROCESS TYPES AND IMPLICATIONS FOR LEAN RESULTS

Government processes can vary both by *frequency* and *variation*. Process frequency refers to how often a process is executed. Process variation refers to the degree of change or difference among outcomes or products produced by a process. These attributes can have important implications for the types of results—time, quality, and cost—that can be achieved and should be expected from Lean implementation. For example:

- **High frequency-low variation processes:** Lean results can be particularly compelling for high frequency-low variation processes, particularly in terms of time and cost savings. The benefits from Lean improvements accrue each time a high frequency process is executed. For example, Lean improvements to a travel authorization/travel voucher process or a procurement/purchase card process can save time and money every time the process is executed. When these processes are exercised thousands of times per year, benefits add up quickly. Low variation processes are often less complex, making it easier to use Lean tools to drive out non-value added activity. Think about opportunities for building momentum with Lean success on high frequency, low variation processes.



- **Low frequency-high variation processes:** It can take longer to realize impressive Lean results with low frequency-high variation processes. These processes are typically more complex and do not occur as often as high frequency processes. While the initial time and cost savings can be less dramatic than for high frequency-low variation processes, Lean methods can be highly effective for improving the quality and effectiveness of low frequency-high variation processes. For example, applying Lean to a periodic strategic plan development process or a rulemaking process can produce meaningful time and cost savings, but the real value may lie in improvements to the quality, effectiveness, and transparency of these processes. Value stream mapping and other Lean methods are powerful tools for reducing the complexity of high variation processes. Lean also creates more robust institutional memory of the process that avoids reinventing the wheel in the future.

Another Dimension that Can Affect Lean Results: *Multi-Agency Processes*

Processes that involve hand-offs among multiple government agencies or offices pose unique challenges and opportunities. Each agency has its own internal process that interfaces with other agencies' processes. These agency-specific processes may not be well-aligned and process "ownership" boundaries may not be clear. Value stream mapping can be a powerful tool for building cross-agency understanding, trust, and alignment. Kaizen improvement events can help improve internal agency processes that interface with the multi-agency process. Leadership and political will across the participating agencies is typically needed to navigate obstacles arising from differences in agencies' missions, goals, and organizational cultures.

Think carefully about which processes types you want to target first and set realistic expectations for results.

Screen for Readiness to Select the Project

After you have narrowed your list to the most desirable projects, screen the projects for readiness. You should select the project that is most well-suited at the present time to produce positive results for your organization, and serve as a model to inspire future projects. Consider the following factors:

- **Project ownership by a sponsor:** If there is no obvious individual to oversee and lead a Lean project and motivate others to change, then it is not likely a good candidate. The project should be designed to produce results that will be meaningful to the sponsor, so that the sponsor will be invested in making it succeed.
- **Engagement of key managers:** If key managers, including front-line supervisors, show resistance or opposition to an improvement effort, it can be difficult to move forward with implementation.

Choose a Lean Method

Once the initial scope of the project has been determined, consider which Lean methods to use. Two common event-based Lean methods are value stream mapping and rapid improvement (kaizen) events. While these event-based Lean methods are powerful methods for driving continuous improvement, there is a range of complementary Lean methods that can also support continuous improvement and process excellence. This Starter Kit focuses on event-based Lean methods; however, other important Lean methods are summarized later in this section. Your Lean facilitator can guide you in choosing the methods that are right for your agency and process.

- A **rapid improvement event** (also called a kaizen event) is a highly structured, 2-5 day facilitated event involving a team of staff and stakeholders that is designed to rapidly make progress in identifying and implementing improvements to a process. Participants map out the steps of the process, gaining an understanding of all parts of the process, and then identify areas where non-value added steps can be eliminated in order to reduce waste. Rapid improvement events are characterized by immediate implementation of process improvements *during the event*. The event is typically followed by weekly implementation team meetings and post-event progress meetings with leadership, usually 30-, 60-, and 90-days after the event, to track the implementation of identified improvements.
- A **value stream mapping event** is similar to a kaizen event, but higher level in focus; it also requires the dedication of a team of participants, generally for 2-4 days, and a facilitator. The team maps out the entire process from start to finish in its existing state in a high-level visual representation of process flows. Participants then create an alternative future state map based on the elimination of waste from the existing state. Improvements are identified to transition from the existing process to the future state. A value stream mapping event approach is more high-level and strategic than a rapid improvement event, and can be used to create a full picture of a process before drilling down into tactics through other methods.

Agencies just starting out with Lean often use rapid improvement events to quickly achieve the results that have interested many in Lean. Conducting one or a few rapid improvement events can help build momentum for a Lean initiative. Some agencies choose value stream mapping (or simplified process mapping) for their first project, since this method can help an agency clearly understand its process and

identify areas of waste that can be targeted through future projects. Other agencies have integrated value stream mapping and kaizen rapid implementation techniques in the same project.

Rapid improvement and value stream mapping events are very powerful methods, yet they can require substantial investments of time, energy, and financial resources. In some cases, other Lean tools may be most appropriate, such as in situations where resources are limited. The *Lean Methods Table* below describes various Lean methods and the situations in which it makes sense to apply them. Some of the Lean methods, such as 5S and visual controls, can be implemented either during or outside the context of Lean events. The [Lean Government Methods Guide](#) provides additional information on these methods and how to select them.

RESOURCES

Pre-Screening Application for Lean Projects

Lean Government Methods Guide

Keep in mind that while many of these methods involve a formal, planned approach to process improvement, your organization can also regularly implement “**just-do-it**” actions that do not require team participation or little or no formal tools. These quick fixes can empower employees to perpetuate continuous improvement through their everyday operations, and reduce waste and improve efficiency outside the bounds of formal events. You can identify “just do its” in kaizen events, or through process walks or in your daily work once you have an understanding of Lean concepts. In this way, processes can continue to improve without waiting for time and resources to be dedicated to a Lean event.

Lean Methods

METHOD	DESCRIPTION	WHEN TO USE THIS METHOD	EXAMPLES
Process Walk/ Treasure Hunt/Gemba	A cross-functional team of employees walks through the work area over a short period of time, identifying opportunities to reduce waste and introduce improvements as they walk. Improvements can usually be implemented rapidly, resulting in quick gains. This method can help to engage employees in spotting waste in their day-to-day activities beyond the scope of the initial treasure hunt or process walk.	To identify immediate and/or easy changes; to identify waste in a process “on the floor”	South Carolina Department of Environmental Health and Control conducted a process walk prior to a Lean process improvement event in order to establish an understanding of areas with the greatest need for improvement. ¹⁰

¹⁰ For more information, see the South Carolina Stormwater Permit Process case study: <https://www.epa.gov/lean/lean-government-south-carolina-stormwater-permit-process-lean-event-case-study>

METHOD	DESCRIPTION	WHEN TO USE THIS METHOD	EXAMPLES
Standard Work	This tool represents the sequence of activities needed to perform a given operation, and forms the baseline for other continuous improvement efforts. Improvements made during kaizen events are immediately documented as standard work to ensure that all employees understand and consistently implement the new process. Standard work (e.g., templates, forms, & process maps) ensures consistency and prevents errors.	In conjunction with other process improvement efforts, to document and sustain identified process improvements	EPA Office of the Chief Financial Officer developed a standard format for corrective action plans, dramatically improving efficiency and data accessibility. ¹¹
Visual Controls	Visual controls, which are signs or symbols to remind employees of standard procedures, can be used to reinforce the improvements made to a workspace using 5S. These controls are also used for implementing standard work and improvements identified during other Lean events, to provide visual feedback on process performance.	To quickly remind employees of identified improvements and ensure continued implementation, reducing deviations from the desired standard	Examples of visual controls include color-coded filing systems, labels, timers, and signs reminding employees of standard practices.
5S	5S is a method for maintaining an efficient & functional workplace based on five steps: <ul style="list-style-type: none"> • Sort (organize tools and materials, retaining only what is essential) • Set in Order (arrange and label items in an order that maximizes workflow) • Shine (regularly straighten and tidy workspaces and restore items to their place) • Standardize (spread identified improvements to all workstations) • Sustain (maintain and review standards to ensure they continue to be implemented) • Some organizations add a sixth “S” for Safety. 	When there is a need to improve workstations and workplace organization	The state of Minnesota has established a 5S training program for government offices; Indiana Department of Environmental Management (DEM) has applied 5S to establish orderly, efficient work areas.

¹¹ For more information, see the EPA Office of the Chief Financial Officer Corrective Action Tracking case study: <https://www.epa.gov/lean/epa-office-chief-financial-officer-corrective-action-tracking-case-study>

METHOD	DESCRIPTION	WHEN TO USE THIS METHOD	EXAMPLES
A3	This rapid-deployment tool is a framework to guide a problem-solving process, and complements organizational strategy by displaying the connections between overall priorities and tactical Lean efforts. Individuals or small teams diagram a process or problem, propose solutions, and establish an implementation plan using only what they are able to fit on a standard A3-sized (approx. 11 x 17") piece of paper. This method requires that the team communicate well to depict the process simply, and results in a high-level view of the current steps in the process as well as a path to the improved state. In the process, the team improves their problem-solving capacity.	To connect overall organizational strategy to all levels of process improvement efforts; to identify areas for quick improvement, and flag areas for potential future improvements	Indiana DEM has applied the A3 method at the staff level to improve connections between strategy and improvement efforts, and to improve communication across the agency.
Mini-Lean Event	A condensed, small-scope improvement effort on a single improvement that can be completed in a very short time-frame, often a matter of a few days or even hours.	Time constraints and/or limited financial resources; when there is a need for extremely rapid small-scale improvements	Iowa Department of Natural Resources has conducted six point kaizen exercises on processes with a small scope and condensed timeline.
Rapid Improvement Event (Kaizen Event)	A structured event led by a facilitator in which a team of participants (composed of a mix of leaders, staff experts in the process, and people less familiar with the process) map out a process, identify areas for rapid improvements, and implement the changes during the event. This tool can help jump-start a larger, sustained process improvement effort across an organization by serving as a pilot project.	The primary implementation method for Lean, use kaizen events to identify process changes for practical implementation	Florida Department of Environmental Protection's Submerged Lands and Environmental Resource Permitting Program rapid improvement event achieved a 50% reduction in the time it takes for an application to reach a processor. ¹²

¹² For access to several case studies on rapid improvement events, see the EPA Lean Government Publications page: <https://www.epa.gov/lean/lean-government-resources>

METHOD	DESCRIPTION	WHEN TO USE THIS METHOD	EXAMPLES
Value Stream Mapping Event	A structured event led by a facilitator in which a team of participants maps out an entire process from beginning to end, identifying areas for future process improvement efforts. This method provides a thorough, high-level understanding of the process and helps identify future steps for improvement.	Prioritization and planning tool to gain high-level understanding of processes and identify areas for future improvement efforts	EPA Region 6 Pesticides Enforcement value stream mapping event reduced total processing time by 53%. ¹³
Six Sigma	<p>A process improvement methodology that aims to improve processes by reducing variability and removing defects (or errors) using quality management methods including statistical analysis of processes. Processes are rated by their “sigma rating,” which indicates the percentage of defect-free results or products generated. Organizations train staff to become Lean Six Sigma green-belts or black-belts, who are experts in reducing defects. Six Sigma improvement efforts follow the DMAIC methodology:</p> <ul style="list-style-type: none"> • Define the problem • Measure key aspects of process data • Analyze the data • Improve or optimize the current process • Control the future state process to correct any deviations 	When the specific problems in a process are data rich and quality related or highly variable and statistical analysis would be useful (Requires knowledge of statistical methodologies)	Minnesota Pollution Control Agency used Six Sigma to improve the timeframes for its NPDES permitting timeliness from 9% to 75% within 180 days and reduce the NPDES reissuance permitting backlog from nearly 50 percent to 8 percent. ¹⁴
Lean Process Design	Methods for designing new processes or products or for redesigning existing ones. These methods incorporate Lean and Six Sigma concepts and tools to design processes that meet customer needs through processes that are as simple and streamlined as possible, anticipating and addressing potential problems early. Lean process design methods include Lean Startup, Design for Lean Six Sigma, and Production Preparation Process (3P)	When designing a new process or product, or redesigning an existing one (More advanced Lean method)	Iowa DNR applied Design for Lean Six Sigma to its effort to design a new agency magazine to achieve on-time high-quality production while meeting day-to-day communication needs.

¹³ For more information, see the EPA Region 6 Pesticide Enforcement Case Resolution case study: <https://www.epa.gov/lean/epa-region-6-pesticide-enforcement-case-resolution-lean-event-case-study>

¹⁴ For more information, see the Minnesota Wastewater Permitting Process Six Sigma Project Case Study: <https://www.epa.gov/lean/minnesota-wastewater-permitting-process-six-sigma-project-case-study-2003>

METHOD	DESCRIPTION	WHEN TO USE THIS METHOD	EXAMPLES
Strategy Deployment	A strategic planning methodology in which all employees participate in process management to “cascade down” strategy deployment goals through all levels of the organization. This method is designed to ensure that all staff go about their work in a way that applies the master plan of the organization consistently. Regular review of actions is necessary to address deviations from the strategic plan. Also known as policy deployment or Hoshin Kanri.	When an organization is interested in connecting process improvement efforts to overall strategic goals (More advanced Lean method)	Iowa DNR applies policy deployment to prioritize process improvement efforts based on strategic objectives, and to select projects that promise to have the greatest impact on agency performance.

Identify a Lean Facilitator

All Lean events are led by a Lean facilitator who organizes and manages the discussions. The importance of securing a skillful Lean facilitator cannot be overstated. The Lean facilitator serves as a team’s guide throughout the Lean process, helping to scope the Lean event, facilitate the event, and advise on follow-up activities. Sometimes the Lean facilitator is referred to by the Japanese term *sensei*, meaning teacher or “one who has gone before.”

Most agencies seek outside assistance at the beginning of their experience with Lean efforts; indeed, relying on external consultants to provide facilitation can be a valuable strategy for generating positive Lean results rapidly and helping your program take off. Over time, many agencies choose to build capacity for in-house facilitation and training in order to reduce dependence on external facilitators, which can be costly. However, even agencies that have developed in-house capacity for Lean training and facilitation find value in occasionally seeking additional assistance, especially for more complex or politically sensitive projects. See Chapter 7, “Diffusing Lean Activity and Becoming a Lean Enterprise,” for more advice on building Lean capacity within your organization over time.

If you do choose to pursue external resources for facilitation, there are a range of technical assistance providers that facilitate Lean events, including private consultants, non-profit National Institute of Standards and Technology (NIST) Manufacturing Extension Partnership (MEP) centers, and university-based training programs.¹⁵ Private sector companies who are using Lean have also provided technical support to agencies by allowing agency staff to attend industry trainings and providing Lean facilitators for agency events.

When evaluating a potential Lean facilitator, it is important to consider the facilitator’s past experience, areas of expertise (e.g., supporting Lean in government and office settings), price, and availability. In general, the cost of an experienced Lean facilitator ranges from approximately \$2,000 to \$3,400 per day. The cost of having an experienced facilitator is typically well worth it to ensure a successful Lean event.

Several helpful tips for securing a Lean facilitator include:

¹⁵ A directory of NIST MEP centers is available at: <http://ws680.nist.gov/mepmeis/FindYourLocalCenter.aspx>.

- Talk with representatives from other government agencies to ask for recommendations for potential Lean facilitators.
- Consider issuing a request for proposal to help with the selection of an experienced Lean facilitator. The sample *Lean Facilitator Request for Proposal* resource should give you some ideas of the types of information to request.
- When evaluating potential Lean facilitators, take into consideration the facilitator's past experience, areas of expertise (e.g., supporting Lean in government and office settings), references, price, and availability.
- Remember that securing a talented facilitator is not the same as securing a talented facilitator who has experience running Lean events.

RESOURCES

Lean Facilitator Request for Proposal

EPA Continuous Process Improvement Training Strategy

After your initial successes with Lean projects, try to identify individuals who might be interested in becoming trained Lean facilitators within your organization who can then lead future projects. Building internal capacity for facilitation in this way can ensure the longevity of process improvement efforts, even through times of financial constraints, and also empower staff to identify areas for improvement during their daily activities. As you “learn by doing,” be sure to engage anyone who might be interested in becoming trained to facilitate events. Some agencies even develop internal facilitator training in order to maintain an infrastructure of continuous improvement capacity. See the Lean Facilitator Request for Proposal and the EPA Continuous Process Improvement Training Strategy in the Resources section for more information on building internal facilitation capacity and a culture of continuous improvement.

The next chapter explains how to scope a Lean project after you have selected it, and to prepare for a Lean event.

CHAPTER 4. LEAN PROJECT SCOPING AND EVENT PREPARATION



Once you have decided to conduct a Lean project, selected a process, and secured an internal or external facilitator, conducting effective planning and scoping are essential for success. This chapter continues the “Plan” phase of the Plan-Do-Check-Act problem-solving framework and explains the scoping process and steps that you should take during the weeks leading up to an event (if your project involves one). Follow these steps carefully to ensure that all participants will be well-prepared for a smoothly organized experience during your Lean event. If your project uses a format other than a rapid improvement event, you

should still carefully plan and scope the project so that it will be most likely to meet or exceed your expectations. Note that the first two sections provide guidance that is generally applicable for all Lean projects, while the latter two sections are focused on how to plan and prepare for a Lean event.

STEPS FOR PROJECT SCOPING AND PREPARING FOR A LEAN EVENT

- ➔ Select the Project Team
- ➔ Scoping Meeting: Develop the Charter and Identify Metrics
- ➔ Plan Event Logistics
- ➔ Prepare for the Event

Select the Project Team

After selecting the focus of your process improvement project, the next step to take in a Lean project is to identify who will be involved and invite those people to participate in the project.

Identify the Lean Project Sponsor and Team Leader

Several key individuals will bear the lion’s share of responsibility for your project’s success. The Lean facilitator (for event-based projects), the project sponsor, the team leader, and the implementation team leader serve vital roles. As you identify individuals to serve in these roles, consider the responsibilities inherent to each role, described below. The role of facilitator is described in Chapter 3.

Lean Project Roles

ROLE	DESCRIPTION
Sponsor	<p><i>Planning/Scoping:</i></p> <ul style="list-style-type: none"> • Help develop the Lean project charter, including identifying goals and objectives, setting the scope, and recommending participants. • Authorize the Lean project. • Approve staff time and other resources as needed for planning, Lean event (if applicable), and follow-up. <p><i>Lean Event or Other Process Improvement Activities:</i></p> <ul style="list-style-type: none"> • Participate and provide input at the project kick-off and final report-out presentation. • Attend management briefings during the event (e.g., daily) <i>OR</i> participate fully in the event. • Communicate project direction. • If your project is not a rapid improvement event, participate in management briefings and major project team meetings throughout the improvement effort. <p><i>Follow-Up:</i></p> <ul style="list-style-type: none"> • Keep the team accountable for results and implementation of process changes (e.g., where appropriate, engage with management of participants that have a significant role in implementation). • Demonstrate commitment to full implementation and keep the team motivated. • Participate in routine check-ins with the Implementation Team Leader (e.g., weekly or bi-weekly 15-minute stand-up meetings). • Attend major follow-up meetings (i.e., 30-day, 60-day, 90-day, 6-month, 1-year, etc.) to review process performance data and discuss project progress with the project team. • Help make implementation successful by removing barriers when needed (e.g., reducing competing demands on staff time).

ROLE	DESCRIPTION
Facilitator	<p><i>Planning/Scoping:</i></p> <ul style="list-style-type: none"> • Facilitate the pre-event scoping meeting or meetings. • Work with the team to develop the Lean project charter, select the team, and prepare for the event. <p><i>Lean Event or Other Process Improvement Activities:</i></p> <ul style="list-style-type: none"> • Facilitate the Lean event, including working with the team to: <ul style="list-style-type: none"> ○ Map the current and desired future state of the process. ○ Identify and, if possible, implement process changes (e.g., develop standard work). ○ Develop an implementation plan for follow-up after the event. ○ Prepare for the event report-out presentation. • If your project is not a rapid improvement event, facilitate project meetings to guide the team to analyze and improve the process using Lean or other methods. <p><i>Follow-Up:</i> If requested, facilitate major follow-up meetings.</p>
Implementation Team Leader	<p><i>Lean Event or Other Process Improvement Activities:</i></p> <ul style="list-style-type: none"> • Participate in the Lean event and the development of the implementation plan. • If your project is not a rapid improvement event, participate in project team meetings to make changes to improve the process and organize follow-up items that cannot be implemented immediately into an implementation plan. <p><i>Follow-Up:</i></p> <ul style="list-style-type: none"> • Organize and facilitate weekly project stand-up meetings or other check-ins to make sure the team is on track with follow-up items. • Participate in routine check-ins with the project sponsor (e.g., weekly or bi-weekly 15-minute stand-up meetings). • Encourage the team to make progress with implementation and help troubleshoot follow-up when needed (elevate issues to the sponsor or other senior managers if needed). • Track progress with implementation, and keep the implementation plan or other action-tracking tools up to date. • Organize the team for major follow-up meetings with management. • Ensure that data on key process performance metrics are collected at regular intervals, reported to the project sponsor and other key managers, and shared with agency-wide results tracking systems, such as EPA's LeanTrack.

ROLE	DESCRIPTION
Team Member	<p><i>Lean Event or Other Process Improvement Activities:</i></p> <ul style="list-style-type: none"> • Participate in the Lean event and the development of the implementation plan. • If your project is not a rapid improvement event, participate in ongoing efforts to identify and implement improvements, including project team meetings. <p><i>Follow-Up:</i></p> <ul style="list-style-type: none"> • Participate in project team meetings with the implementation team leader. • Make changes to improve the process by carrying out actions in the implementation plan. • Monitor, evaluate, and communicate the results of process changes, based on assigned duties.

Sponsor

Identifying a sponsor is critical to the project's success. Ideally, the sponsor is a director or leader of a division within which the Lean project is taking place. Having a sponsor for a project can also increase buy-in within the agency and among upper management, and assist with removing any obstacles in getting the project planned and process changes implemented. This role is useful when trying to ensure that team members can get 2-5 days of time away from their regular duties and responsibilities to participate in an event.

The sponsor participates at key times during the project and oversees implementation activities to keep the project team accountable for achieving its goals and objectives. The sponsor will work closely with the implementation team leader following any Lean event to make sure that improvements move from anticipation to reality. While the implementation team leader focuses on keeping the project team on track with its assignments, the sponsor's role is to push the team to achieve its overall project objectives and help remove barriers that may be in the way.

The sponsor should be enthusiastic, committed to the process, willing to take risks, and be open-minded and communicate this spirit to the team members. At times it can be difficult to sustain creative thinking and risk taking. The sponsor's role is to help infuse the team with energy and direction, and to encourage openness to out-of-the-box thinking.

RESOURCES

Lean Project Sponsor Contract

Lean Leadership Guide

Specific responsibilities of the Lean project sponsor include:

- Provide the necessary financial resources for the project.
- Identify potential Lean team members (along with the team leader).
- At the project kick off, communicate expectations to the team and set the direction of the Lean project.
- Clearly state that the process that the Lean team develops during the project will be the new process—the team is not making recommendations.
- Communicate to the team that you will do everything possible to support the new process.

- Challenge the team to develop innovative solutions and ideas without introducing pre-conceived ideas.
 - Be visible during the event or project meetings and provide enthusiastic support of the participants.
 - Attend team leader meetings and daily management briefings during the event and provide redirection if needed.
 - Assist in removing obstacles during the event, project meetings, and/or implementation.
 - Be strategic: Use the project to advance agency objectives by improving the performance of the process while being aware of the impact to the total system.
 - Attend the report-out session for the event or project to show support and recognize team members for their efforts.
 - Track the status of implementation after the project to make sure the team continues to make progress and does not backtrack.
 - Hold the project team accountable for achieving the project's goals and objectives and for implementing the new process.
-

A Lean project sponsor contract (see resource) can be used to affirm a sponsor's responsibilities and to demonstrate his or her commitment of support.

Team Leader

The team leader plays a critical role in planning project activities and managing participation of team members during Lean events or other project meetings. For event-based projects, the team leader assists the facilitator in setting the stage for a productive event. It is often preferable for an outsider to help the team navigate entrenched perspectives, creating a more open and transparent environment for team members to be creative. In other cases, it can be useful to have a well-respected individual from the work area who can help drive and sustain commitment to improvements made by the team through assistance with follow-up activities. Think about what makes most sense for your organization.

The team leader helps coordinate event logistics, including securing the event space, arranging for meals, and purchasing supplies. Ideally, the team leader has an assistant who helps with administrative tasks that need to be accomplished prior to and during a Lean event.

Specific roles and expectations of the team leader include:

- Identify potential Lean team members (along with the sponsor).
- Support the team members in finding solutions.
- Help facilitate an open exchange of ideas.
- Encourage creative thinking and problem-solving.
- Support the team during project implementation.
- Ensure that all project objectives are met.
- Help prepare for the project.
- Assist in selecting team members
- Prepare the schedule and agenda.
- Gather needed materials and tools.
- Keep up to date on all aspects of the project.
- Assist with documentation and reporting.

- Secure consulting services of Lean facilitators.
- Arrange a site visit for the project team to talk with the workers and see the process in action.

When the team leader is from outside the specific content area in which the project is occurring, good communication is crucial. Team leaders will need to know the goals and objectives of the project, any process requirements, and the expectations of the team members. Any contextual information, such as past problems encountered and gains achieved should be shared with the team leader.

Select Other Participants and Determine Roles

Thoughtful participant selection can ensure a successful project, making it important to carefully select staff and stakeholder participants. The sponsor and team leader typically work together with the facilitator to identify team members. Team members are expected to attend entire Lean events and fully participate by providing input and ideas. Team members are also expected to complete assignments identified during the event or project meetings. Here are some things to consider when selecting participants and determining roles:

- Ensure the team has **cross-functional representation**. Consider including a mix of participants who work directly with the process, those who manage or supervise the process, and those who are not directly involved but interact with the process (e.g., customers, support processes).. It is important that members of the team are empowered to make commitments about process improvement ideas that are within the scope of the project.
- Don't forget to include **customer or stakeholder representatives** in your project team. Including these outside perspectives in your team can be very useful in identifying root causes of problems and brainstorming creative solutions.
- It is often helpful to have a representative from the agency's **information technology (IT) group** involved as team members or available to provide on-call support, since most processes have some important relationship to agency databases or information systems. For more information on integrating Lean and IT in Lean projects, see the [Lean and Information Technology Toolkit](#).
- It may also be useful to consider whether people from the agency who are indirectly affected by the process or representatives from **other support functions**, such as accounting, legal, or human resources would be helpful to include in the team or have available to provide support. It is also often helpful to include union representatives.
- Participant selection can help secure buy-in from all levels of an agency for the process improvement efforts. Most importantly, you should include staff and managers on the team that can continue implementation after any event. Consider involving informal as well as formal leaders on your Lean project team.

RESOURCES

Lean and Information Technology Toolkit

TEAM LEADER EVENT PREPARATION CHECKLIST

For Lean projects involving rapid improvement events, consider using the following checklist of activities needed to plan and prepare for an event. The team leader may delegate these tasks as appropriate.

4 (or more) weeks before event:

- ✓ Coordinate with sponsor to select the process to improve
- ✓ Identify potential team members
- ✓ Identify resources required
- ✓ Develop draft charter with facilitator and sponsor (sponsor and team leader provide substantive input, facilitator manages the process, full team confirms charter at scoping meeting)
- ✓ Reserve meeting space and time on participants' calendars
- ✓ Establish pre-work that the team will need to complete, including data collection

3 weeks before event:

- ✓ Socialize the charter and gather approval signatures
- ✓ Collect baseline data

2 weeks before event:

- ✓ Confirm availability of personnel and resources
- ✓ Remind leaders and sponsors to be available for report-out and any daily management briefings
- ✓ Ensure affected parties in the event focus area are aware of the impending event
- ✓ Ensure affected parties have a method to forward observations

1 week before event:

- ✓ Prepare data packets, employee suggestions, supplies, toolkits, forms, and meeting spaces for event
- ✓ Confirm event agenda and schedule with all affected parties

Lean event teams are typically comprised of 8-10 members; other team-based Lean projects may want to use a similar size limit. Some processes are extremely complex, however, and it may take additional participants to get all the right players at the table. If additional participants are required, the largest size recommended is 15. Once the group size gets beyond this size, it can become very challenging to manage, especially for the facilitator.

- If you cannot pare down your list of critical participants for an event or project below 20, consider convening off-site meetings on specific topics, such as holding a meeting that deals exclusively with a specific aspect of the process that some participants may care most about, such as legal review. This approach is suggested for highly complex processes or issues.
- One strategy for getting more people into the room during a Lean event or project meetings is to distinguish between observers and participants. Observers should be limited in number and should not exceed a few at a time, as too many observers may cause team members to be uncomfortable or hesitant to express their viewpoints. While observers are welcome, it is critical to communicate that they are observers only.

- Team members are expected to shed all of their operational responsibilities during the course of the event or project meetings, thereby allowing them to completely focus on the project. It is highly disruptive and disrespectful to the team if a senior manager or other team member is routinely taking calls, checking email, or leaving the room. Ensure that each team member's responsibilities are delegated to other staff during the event or project meetings and communicate the expectation that team members should not be doing other work.
- If you are having trouble selecting team members, it may be useful to hold a scoping meeting with a small group of staff to identify all the activities included in the project scope and which staff members are connected to these activities. In addition, the Lean facilitator can provide advice on how to select participants (e.g., qualities/characteristics to look for).

Scoping Meeting: Develop the Charter and Identify Metrics

The scoping meeting is probably the most crucial step in planning and preparing for a successful Lean project. It occurs at the beginning of a Lean project or between three and six weeks prior to a Lean event. The scoping meeting is commonly held in the venue in which the Lean event will take place. The scoping meeting should include the full team participating in the Lean project or event, including all team members, the Lean facilitator, the project sponsor, the team leader, and key managers and other staff who oversee or are involved in the process to be targeted by the Lean project.

RESOURCES

Lean Government Event Scoping Guide

Scoping Meeting Agenda

Lean Team Charter

SIPOC Instructions and Template

Scoping meetings typically last between two and four hours, depending on the complexity of the process and project and the Lean experience of the participants. During the scoping meeting, participants will create or refine the *Lean Team Charter*, an important document which sets out the scope of the process that will be addressed in the project, establishes the goals and objectives of the project, outlines initial data collection activities, and identifies the team members. This section explains how the scoping meeting participants should decide what each of these important components of the charter should be.

There are eight steps (described in this section below) in the scoping meeting to create a charter that will best prepare for a successful project:

STEPS FOR DEVELOPING A LEAN TEAM CHARTER

1. Record event dates and location
2. Describe the process and problems to address
3. Develop the project scope
4. Clarify boundary conditions for the project
5. Identify goals and objectives
6. Identify performance metrics and pre-event data collection needs
7. Set a schedule for follow-up meetings
8. Identify team members and on-call support

You can read much more about these steps in the [Lean Government Event Scoping Guide](#), which has examples of environmental agency experiences with Lean project scoping.

Step 1: Record Event Dates and Location

Record the meeting locations, project dates, and meeting times at the top of the charter. Team participants will use the charter as a reference, so this information will serve as a useful reminder to clear their schedules in advance of the project.

Step 2: Describe the Process and Problems to Address

Provide a brief description of the process that is the subject of the Lean project. Identify the primary customer(s) and deliverable(s) of the process. Identify the problem (real or perceived) that the team is trying to address in the project, including any evidence of the problem. Describing the process and problems up front can help the project team communicate about the project during and after a Lean event.

Consider conducting a SIPOC (Supplier, Inputs, Process, Outputs, Customer) analysis to decide on the specific focus for your Lean project. A SIPOC diagram documents the key boundaries of your process, including the start and end points, the inputs and outputs, and parties that interact with the process. This tool helps provide a natural but structured way for a Lean project team to clarify the focus of a project during a scoping meeting before creating a more detailed process map during an event or other project meetings. Think of a SIPOC diagram as a tool to capture the most critical information regarding a process. This approach is now standard practice for scoping meetings for EPA Lean projects.

- **Suppliers:** Organizations or individuals who provide input to the process
- **Inputs:** Information, expertise, and materials needed to perform a process
- **Processes:** Sequential set of linked tasks that transforms input into output
- **Outputs:** The product, service, or other deliverable(s) from the process
- **Customers:** Anyone (external and internal) that receives the output from the process

	Suppliers	Inputs	Process	Outputs	Customers
PROCESS			In SCOPE Trigger: End Point: Receiver confirms receipt of the notice however, post receipt questions and inspection issues are subject to analysis Major Phases/Tasks The process of identifying the need		
			OUT OF SCOPE		
SCENARIOS	In Scope:	In Scope:	In Scope:	In Scope:	In Scope:
	Out of Scope:	Out of Scope:	Out of Scope:	Out of Scope:	Out of Scope:
IT SYSTEMS	In Scope:	In Scope:	In Scope:	In Scope:	In Scope:
	Out of Scope:	Out of Scope:	Out of Scope:	Out of Scope:	Out of Scope:
POLICIES	In Scope:	In Scope:	In Scope:	In Scope:	In Scope:
	Out of Scope:	Out of Scope:	Out of Scope:	Out of Scope:	Out of Scope:
FUNCTIONS	In Scope:	Out of Scope:	Out of Scope:	Out of Scope:	Out of Scope:

Step 3: Develop the Project Scope

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- **Define key components of the project scope.** Begin by discussing and identifying key components of the project scope that will keep the team focused on specific areas that will best enable them to improve the process. The scope should identify the process, the project name, the trigger that sets the process in motion, the first and last steps in the process, and the specific process conditions that the team assumes to exist for the purpose of the project. Be as specific as possible when documenting the scope in order to avoid confusion.
- **Consider whether the scope is sufficiently narrow.** Once you have clearly documented the components of the project scope, step back and consider whether the scope is narrowly defined enough to accomplish in a few days' time. This step is critical to the success of the project. Many teams have a tendency to scope Lean events too broadly, which can lead to an event consumed by charting the current process and that lacks sufficient focus directed onto creating specific, implementable improvements.
- **Consider implications of the scope and align expectations.** Scoping an event is a balancing act; on one hand you want to scope the event broadly enough to enable a strategic and systems-focused improvement approach; on the other hand, you want to be able to focus in enough detail to be able to drive timely and effective implementation actions during or immediately following the event. Be aware that a too-broad scope will necessitate extra follow-up implementation planning and support, and potentially even additional Lean events. Be sure to align leaders' expectations for results with what can realistically be achieved.

Ask your Lean event facilitator for help with appropriately scoping a Lean event.

Another strategy that can be useful for managing the scope of projects that could otherwise be too big is to conduct a half-day visioning session to map the process to get an understanding of the problem areas and opportunities at a high level and then develop a realistic plan for rapid improvement events or other improvement projects (see box). Additionally, talk with other environmental agencies that have targeted similar processes using Lean. Staff at these agencies may be able to offer suggestions for scoping and planning your Lean project.

VISIONING SESSION: A STRATEGY FOR PROJECT SCOPE MANAGEMENT

If you think your Lean team may be considering a process improvement project with too large a scope, consider convening key leaders during the early stages of project planning to hold a *visioning session*. In a visioning session, leaders involved in the process area meet for a day or less to discuss the process improvement project and map out an overall plan at the "50,000-foot" level. This can be done in conjunction with the scoping meeting or separately. Use this exercise to gain an understanding of where there may be opportunities to eliminate waste in the process, and then discuss which area or areas to target for more detailed analysis in a Lean project. Holding a visioning session early in the planning process can help avoid the problem of scoping a project too broadly, because leaders will be able to gain an overall understanding of the process before an event or other project activities, and then define an appropriate scope and goals.

Step 4: Clarify Boundary Conditions for the Project

During scoping discussions, it is crucial that the project sponsor, possibly in coordination with other key agency managers, set clear boundaries for the Lean project. Setting boundaries in advance helps a Lean team to keep its focus on those aspects of the process and potential solutions it has reasonable control over. It is important that the scope for the project be limited to areas for which the Lean team is empowered to make changes and decisions. There are two key types of boundaries:

- **Process-scope boundaries:** It is important to clearly identify where the process starts and ends, at least insofar as which parts of the process will be discussed during the Lean project. It may also be necessary to draw clear lines where hand-offs are made to other processes. For example, it may be appropriate for a state Lean project to establish that an external review process (e.g., EPA review, public comment process) will be “out of bounds” for what the project team is examining.
- **Solution-scope boundaries:** It may also be important to set limits on the types of changes that are allowed as part of the Lean project. For example, it is typically appropriate to say that policy changes are off-limits.

Conducting a SIPOC analysis, as described above in Step 2, will help your team through the process of defining boundary conditions for the project.

RESOURCES

SIPOC Instructions and Template

Establishing clear boundary conditions for the Lean project can address potential concerns that some agency staff or stakeholders may have while also clarifying team expectations about aspects that are fair game for improvement. Key examples include:

- **Clear boundary conditions ensure that agency objectives—such as environmental protection and public participation—are not undermined.** For example, changes that would require rulemaking action are generally considered out of bounds during a Lean project, although these ideas could be held in a “parking lot” for future consideration.
- **Boundary conditions can be helpful in addressing key stakeholder concerns up front.** For example, when conducting a Lean project on a permitting process it may be necessary to clearly state that public comment and participation opportunities will not be lessened, or that the time for substantive analysis and review by permit engineers will not be lessened.
- **Boundary conditions can help set clear expectations about the availability of resources.** Lean projects are designed to strongly encourage creativity to find ways to reduce costs rather than to increase capital expenditures.

While it is okay to allow teams to set some boundary conditions during the project, it is important to identify which boundary conditions must be set in advance.

EXAMPLE BOUNDARY CONDITIONS FOR A STATE AIR PERMITTING PROJECT¹⁶

In Scope

- Interpretation of agency rules, policies, and guidance documents
- Internal organizational structure
- Internal permit process and timing
- Applicant interaction and timing
- Electronic submittals
- Application content and format
- Permit and technical memo format
- Special condition content
- Communication (internal/external)

Out of Scope

- EPA regulations
- Interpretation of EPA rules, policies, and guidance documents
- Modifying existing agency rules
- Additional resources
- Permit appeal process
- Mandated public participation requirements
- Permit involving enforcement action
- Public hearing process/officer

Step 5: Identify Goals and Objectives

Setting clear goals and objectives for the project enables clear targeting, which is essential for success. These improvement targets are an important component of the PDCA framework's "Plan" phase.

Lean project goals are statements of intent that focus attention on the areas in which improvement is desired. *Goals define the desired outcomes for the project – that is, what success looks like.* The team should establish a shared understanding of the 1–3 highest-priority goals. Example goals include:

- Reduce the lead time for reviewing air construction permit applications.
- Decrease response time for customer calls related to sewer back-ups.
- Increase the percentage of permit applications that are complete and accurate.

Lean project objectives differ from goals in that they are specific and measurable. Objectives should include the goal, metrics associated with the goal (see next step), targets, and timeframes. Examples of well-defined objectives include:

- Reduce the maximum time for first response to permit applicant inquiries to 24 hours within 3 months.
- Improve first time quality of water quality data submittals from 72 to 95 percent by June 1.

You may also want to identify intended qualitative outcomes for the project that cannot be directly measured, such as clarify roles and responsibilities, create standard work procedures, or improve communications.

¹⁶ Example "In Scope, Out of Scope" list based on a presentation of the Delaware DNREC.

Step 6: Identify Performance Metrics and Pre-Event Data Collection Needs

Determining performance metrics, identifying pre-event work, and collecting baseline performance data are important steps for effectively using your time in a Lean project. Collecting baseline data on the process enables a Lean team to understand the process, identify areas for improvement, and assess the effectiveness of potential changes to a process. There also may be other materials to assemble before the project and other tasks to complete ahead of time, such as getting approvals to make certain types of changes during an event.

RESOURCES

Lean Government Metrics Guide

Lean Metrics Checklist

Metrics

Metrics are one of the cornerstones of successful Lean improvement efforts. EPA's *Lean Government Metrics Guide* provides guidance to help you understand and select metrics to support project implementation, including definitions and examples of commonly used metrics. Your team should identify a short list of key performance metrics that will form the basis of the improvement objectives for your project. Your team will be collecting data on these metrics during three critical periods:

- **Before the event:** Collect your *baseline* or “current state” performance data, and use these data to set and/or refine the objectives for the event.
- **During the event:** Measure any results your team has achieved during the event and estimate the *anticipated results* after implementation of the “future state” process.
- **After Lean improvements have been implemented:** Measure the *actual results* based on implementation to see how much you have improved since the baseline and whether you’ve met your objectives.

EPA has established the LEANTrack system to collect data about process-improvement projects across EPA. Team leads use the tracking system to report project metrics periodically. The *Lean Metrics Checklist* (see resource) provides more information to help your team to select, gather information for, evaluate, and report on metrics at the appropriate times in Lean projects.

Common categories of Lean process improvement metrics include the following:

- **Time metrics:** What is the lead time (total time, including waiting) for the process (e.g., start-to-finish time for a permit application review)? How much time is spent actually working on the document or product (processing or touch time)? What percent of products (e.g., permits or travel authorizations) are delivered on time?
 - Key EPA time metrics include **Lead Time**, which is the total amount of elapsed time it takes to carry out a process, *including* waiting time, and **Processing Time**, also known as touch time, is the time needed to complete the actual work in the process, *excluding* wait time. Processing time should always be less than lead time.
- **Cost metrics:** How much does the process cost to operate (e.g., the number of full time equivalent employees)? What cost savings did the team identify in the Lean project?
- **Quality metrics:** How often does the process lead to mistakes (e.g., incomplete or inaccurate forms) that require rework? How do customers or people in the process view the effectiveness and efficiency of the process?

- **Participant Satisfaction** is a key EPA quality metric. It measures a change in a process participant's self-reported satisfaction rating from the baseline process to the new process, typically measured on a 1 to 5 scale from (1) "Very Dissatisfied" to (5) "Very Satisfied." Customer satisfaction, participant satisfaction, and percent complete and accurate are also common quality metrics.
- **Output metrics:** How many products (e.g., permits) are completed or processed each month or year? What backlogs exist in the process?
- **Process complexity metrics:** How many steps are in the process? How many of those steps add value, from the customer's perspective?
- **Resource metrics:** How much paper does the process use? How much energy? How much landfill waste is produced? How much of an environmental impact does each process step have?

LEAN GOVERNMENT PROCESS METRICS		
Time Metrics	Cost Metrics	Quality Metrics
<ul style="list-style-type: none"> ➔ Lead Time (Total Process Time) ➔ Processing Time (Total Work Time) ➔ Percent On-Time Delivery ➔ Value Added Time ➔ Percent Value Added Time 	<ul style="list-style-type: none"> ➔ Labor Savings ➔ Cost Savings ➔ Cost per Product 	<ul style="list-style-type: none"> ➔ Customer Satisfaction ➔ Participant Satisfaction ➔ Percent Complete and Accurate ➔ Rework ➔ Rolling First Pass Yield
Output Metrics	Process Complexity Metrics	Resource Metrics
<ul style="list-style-type: none"> ➔ Production ➔ Backlog ➔ Work in Process ➔ Inventory 	<ul style="list-style-type: none"> ➔ Process Steps ➔ Value-Added Process Steps ➔ Decisions ➔ Delays 	<ul style="list-style-type: none"> ➔ Paper use ➔ Energy use ➔ CO₂ emissions ➔ Solid waste

Along with measuring the results of individual Lean projects, environmental agencies may also want to track the results of Lean implementation at an organizational level. Metrics relevant in this context include the following:

- **Lean deployment metrics:** How many Lean projects have we completed this year? How many employees have participated in Lean projects? How many employees have participated in Lean training? What is the average percent reduction in lead time across all Lean projects?
- **Morale metrics:** How satisfied are employees with the agency or office? What is the staff turnover rate and how does it compare to the average for government agencies?

METRICS FOR EVALUATING AGENCY-WIDE LEAN EFFORTS	
Lean Deployment Metrics	Morale Metrics
<ul style="list-style-type: none"> ➔ Lean Projects Conducted ➔ Lean Project Participation ➔ Lean Trainings Conducted ➔ Aggregate Results from Lean Projects 	<ul style="list-style-type: none"> ➔ Employee Satisfaction ➔ Turnover

Consider these points when identifying key metrics:

- **Determine the purpose of the metrics.** Measuring the wrong things can waste people’s time or reinforce undesirable behaviors. In selecting metrics, consider questions such as:
 - What is the purpose of the metric? What wastes are we trying to eliminate? What behaviors are we trying to reinforce?
 - Who are the key audiences for the metric?
 - How will we use the measurement data?
- **Just use a few metrics.** No more than a few metrics per category are needed. Having too many metrics dilutes the focus of the improvement efforts and can create unnecessary work.
- **Use only the appropriate metrics.** Ask whether there is something important about a targeted process related to each category of process metrics, and do not worry if the answer is “no.” Also consider which metrics would be useful to evaluate across the agency, depending on the status and goals of the Lean or Six Sigma initiative.
- **Focus on customers and agency leadership needs.** While many metrics can show improvements made during Lean projects (e.g., reductions in the number of process steps), only a few metrics matter to customers, including the time it takes to receive a service or product (lead time) and the quality of the service or product. Make sure to include some metrics that reflect key interests of customers, along with metrics that will resonate with agency leaders and support the agency’s strategic goals.

- **Engage data users in the design of the metrics.** It is important to engage people who are familiar with the process in the design of metrics and the development of a system for collecting and reporting performance data. Without consulting front-line employees, agencies risk choosing metrics that are poorly understood, irrelevant, or inconsistently used by the people who do the work.

Data Collection and Other Project Pre-work

During the scoping meeting, take time to assign individual responsibility for “pre-work,” the tasks that need to be completed before a Lean event or other project meetings. Pre-work is needed to establish baseline metrics and to gather background documents that are likely to be useful during a Lean event, such as existing process maps, procedures, or examples of process outputs (e.g., recurring reports). Pre-work assignments should include:

- Clear identification of the person responsible for each pre-work task (the “Owner”)
- Due dates
- People responsible for following up with those performing pre-work
- A clear link between data analysis and the project goals and objectives

RESOURCES

Pre-Event Data Collection Guide

Although Lean events usually include some time to collect baseline data, it can be quite valuable to gather these data in advance, if possible, so that the Lean team can spend more time working on solutions to eliminate waste in the process. Data collection should be driven by the goals and objectives that the team has defined for the project.

Sometimes it can also be helpful to have information on how key customers or stakeholders perceive the targeted process and its outputs. Getting a sense of the “customer’s voice” prior to the Lean project

MEASURING ENVIRONMENTAL OUTCOMES

The ultimate goal of using Lean and Six Sigma in environmental agencies is to protect human health and the environment more efficiently and effectively. The metrics listed in this Starter Kit provide a number of ways to track and evaluate the efficiency of government processes and the operational benefits from process improvement efforts; however, making the connection between process efficiency improvements and environmental outcomes is more challenging. Measuring the contributions of specific Lean or Six Sigma projects to environmental outcomes—such as drinking water quality, human exposure to air pollutants, changes in greenhouse gas emissions, and habitat condition—is difficult, given the variety of variables that influence environmental outcomes.

In most cases, administrative processes targeted by Lean (e.g., a permitting process or grant process) are removed from direct impacts on environmental outcomes. However, there are indirect environmental outcomes that can have significant benefits. By getting process activities and procedures to function smoothly and consistently, agencies free staff time to focus on higher value activities that are more directly linked to environmental protection (e.g., conducting compliance inspections, providing technical assistance to businesses, completing environmental permits, etc.). When a process targeted by a Lean project has a more direct impact on environmental outcomes, the project team should consider whether it is appropriate to identify a metric and target for improving environmental outcomes and then evaluate the changes in that metric as a result of the changes made to the process. Decide whether to use environmental outcome metrics by asking the question: “How does the targeted process affect environmental outcomes?”

can be helpful, particularly if key customer groups will not be represented on the Lean team. It may take some time to get customer input, through interviews or surveys, so plan for and collect this information in advance of a Lean event.

Step 7: Establish a Schedule for Follow-Up

Follow-up meetings with managers provide an opportunity to discuss progress, results, and next steps for on-going improvements. Most organizations conduct 30-, 60-, and 90-day report-out meetings after a Lean event. Six- and 12-month report-out meetings can help ensure that results are sustained and identify the need for future projects. Your project team will also meet more regularly (e.g., weekly) following a event to finish implementation of the process changes, so you could set up the initial implementation team kick-off meeting in advance.

Confirming the dates for follow-up meetings ahead of time can help team members plan for and stay accountable to commitments beyond the scheduled Lean event. The follow-up meeting schedule also provides a timeframe to set deadlines to complete any follow-up tasks identified during the Lean event.

Step 8: Identify Team Members and On-Call Support

As discussed at the beginning of this chapter, your Lean event team should have 8-10 people. The majority of team members should work in the process. It can be helpful to include at least one supervisor and one customer or stakeholder. In the charter, identify the name and function each team member serves in the process such as data entry, document production, supervisor, quality control, IT specialist, or customer.

You may want to identify individuals who could be available as needed during the Lean event to answer question or address issues that cannot be resolved. For example, identifying an IT specialist can be useful if questions about improvements to technology or introducing automation into the process arise.

Arrange Event Logistics and Invite Participants

All events require a certain amount of logistical planning, such as selecting a date, reserving meeting space, re-distributing staff workloads, and securing meals during the event. Addressing these logistical questions before the event helps to ensure smooth implementation and to create a comfortable, stress-free, and productive environment for participants.

This section and the following section on preparing for the Lean event both provide guidance that is specific to Lean events. The preceding sections in this chapter, on the other hand, can be applied to a wide array of Lean projects.

- **Schedule the scoping meeting and the event, and invite participants.** Many people have very busy schedules, so you should send invitations to the scoping meeting and to the event itself as soon as the meeting space is secured, in order to ensure that everyone will be able to attend. The typical duration for a rapid improvement event or value stream mapping event is 2–5 days. Thus, it is important to consider these timeframes when scheduling a Lean event, as holidays or staff vacations could interfere with event timing. If you have opted to hire a Lean facilitator, keep the same scheduling considerations in mind. Sometimes Lean consultants have very limited availability.

- **Reserve sufficient meeting space.** During some Lean events, participants may need to break out into smaller groups for part of the event, so it is important to ensure that space and materials are available for breakout sessions and for the group as a whole. Be sure that meeting rooms have plenty of wall space for posting materials on the walls. Consider whether any special arrangements are needed for the initial training session and/or final report-out presentation, which often involves additional attendees. Consider whether you will need to obtain security clearance or building access for team members and observers.

RESOURCES

Lean Event Supplies List

Lean Event Logistics Checklist

Prepare for the Event

This section and the preceding section provide guidance that is specifically relevant for Lean events.

Socialize the Charter and Collect Signatures

After the team has developed the charter during the scoping meeting, distribute the charter to everyone who will be involved in the event. Be sure that both managers and staff have the opportunity to review the charter. Make any necessary revisions based on input from team members, and ensure that all participants support the charter, agreeing to the scope, goals, objectives, and boundary conditions for the event, including any modifications based on data collected since the scoping meeting. *The project sponsor, team leader, and facilitator should sign the charter before or at the start of a Lean event to approve and affirm their commitment to the project; otherwise, your project is at risk of failure.*

RESOURCES

Event Preparation Checklist

Prepare the Event Agenda

Prior to a Lean event, prepare an event agenda that clearly articulates the objectives and timing for the event. An effective agenda ensures that the objectives and goals of the event match the given timeframe. The Lean facilitator is typically responsible for preparing the agenda, or at least reviewing it prior to sharing it with participants. It is important to distribute the agenda to participants before an event.

RESOURCES

Rapid Improvement Event Agenda

KEY QUESTIONS FOR LEAN EVENT PREPARATION

Ask these key questions after the scoping meeting to ensure that the team is well-prepared for the event.

- Are all participants and affected parties aware of and in agreement with the objectives, scope and expectations for the event?
- Have the project sponsor, team leader, and facilitator signed the charter?
- Have you identified the individuals who will officially kick off the workshop (sponsors and process champions are good candidates)?
- Have you determined when senior staff will be present—for the entire event, for daily report-outs, or for the report-out at the end of the event?
- Have you planned how follow-up activity progress post-event will be communicated to the sponsor and management team? By whom? When?

Establish Ground Rules for the Lean Event or Project Meetings

Setting ground rules for your Lean event or project meetings helps ensure that all participants respect and hear all ideas and viewpoints expressed. Ground rules also remind participants to keep an open mind and to “think outside of the box.” Ground rules are reviewed during the kick-off meeting and are prominently posted for all participants to see. Example ground rules are included in the adjacent resources box.

Communicate About the Project

Communicating proactively with your entire organization is critical to building organizational buy-in to process improvement efforts. Transparent communication, particularly with employees whose work may be affected by the Lean project, is vital to ensuring success.

- **Schedule a briefing with senior management once the scope and objectives of the Lean project have been set.** Top management support is crucial for a successful Lean project, in part because it can affect budget and staff availability. Lean projects, including multi-day rapid improvement events, require senior managers to dedicate time and effort to show their support. It is also important for managers to approve many of the aspects of a Lean project, including:
 - The process that will be addressed
 - The decision to hire an external Lean facilitator, if applicable

EXAMPLE LEAN EVENT GROUND RULES

- ➔ Keep an open mind to change
- ➔ Maintain a positive attitude
- ➔ Never leave in silent disagreement
- ➔ Create a blameless environment
- ➔ Practice mutual respect
- ➔ Treat others as you want to be treated
- ➔ One person—one voice, regardless of position or rank
- ➔ There is no such thing as a dumb question

- The anticipated timeframe, products, and results
- How the project will affect staff availability and workload
- **Schedule daily management briefings at the end of each day during a Lean event.** Ensuring that senior managers are aware of the activities of the Lean team throughout the event keeps them apprised of the process and engaged in its success, and prevents potential negative reactions during the final report-out.
- **Inform staff about the Lean project.** Notifying internal staff that a Lean event or project will occur provides transparency to the process and is a great opportunity to solicit feedback and ideas on project scope or “areas of pain” in the targeted process. Communications with staff should include information on the Lean project as well as background information on Lean methods and how the Lean project could affect staff.
- **Address staff concerns about Lean.** Be extremely proactive in “selling” the idea of Lean to the entire organization. In the long run, process improvement efforts depend on the support you can build by dispelling myths and alleviating fears about Lean prior to the first project. Be sure to directly address potential concerns that some employees may have about Lean or the focus of a particular project. Clearly indicate that no staff will lose their jobs as a result of improvements made from the Lean effort. One state environmental agency noted that staff were initially afraid that Lean would result in lost jobs. Leadership communicated that that would not be the case, and eventually, Lean improvements actually helped to prevent any jobs from being eliminated.

RESOURCES

Frequently Asked Questions About Lean

The “*Frequently Asked Questions about Lean*” resource contains information that is often helpful to communicate to others in the organization.

Collect Needed Data and Information

Prior to an event or in the beginning phase of your project, it is essential to collect background materials and data about the baseline state of the process, based on the performance metrics and pre-work identified during the scoping meeting and documented in the charter. It can be challenging to collect baseline data in some cases, especially during the busy time preparing for an event or project, but be careful to set aside time for this crucial step. Some of the challenges that teams encounter in collecting baseline data about the process can include:

- Not enough time or available staff to collect data prior to the event or project
- High degree of variability in iterations of the process
- The process seems opaque and not everyone understands all parts
- Collecting baseline data is simply overlooked during busy preparation before an event

RESOURCES

Lean Government Metrics Guide

Lean Metrics Checklist

Whatever your circumstances, take the time to establish a clear baseline so you can begin your project with a clear understanding of baseline process metrics. This will enable your team to benchmark your progress and clearly identify the impact that improvements have made.

Finalize Logistics

As the event nears, complete final logistical arrangements:

- **Finalize logistics and schedules.** Logistical preparations such as setting aside space for the Lean event team or meal orders and the finalization of the agenda should be addressed or completed prior to the event.
- **Send reminder email messages or meeting invitations.** It is helpful to send a reminder email or calendar invitation to ensure that team members and others participating in other parts of the event (e.g., daily management briefings and/or the report-out presentation) have the correct dates, times, and locations blocked on their calendars.

CHAPTER 5. CONDUCTING A LEAN EVENT



As mentioned in earlier chapters, rapid improvement events are a primary mechanism by which project teams can make dramatic changes to make processes faster, simpler, and more responsive to customer needs. This chapter addresses key steps involved in conducting a successful Lean event (listed below). Lean events include both planning and implementation activities in the PDCA framework. While the previous chapter discussed scoping a Lean project, including clarifying the problem and setting targets, many of these steps overlap with the analysis and planning in a rapid improvement event. These activities

may also be relevant to project activities that occur outside of an event.

LEAN EVENT STEPS

- ➔ **Lean Event Overview**
- ➔ **Kick off a Lean Event**
- ➔ **Set Up For Success**
- ➔ **Identify Root Causes and Solutions**
- ➔ **Develop an Implementation Plan**
- ➔ **Report Out at the End of the Event**
- ➔ **Celebrate a Successful Event**

Lean Event Overview

The diagrams below lay out the main phases of rapid improvement events and value stream mapping events. Rapid improvement events take place over a 2-5 day period, depending on the scope and complexity of the improvement project. Value stream mapping events are typically shorter than rapid improvement events, and focus on prioritizing improvement opportunities and developing an implementation plan for future improvements. Rapid improvement events are the key method in Lean for making rapid changes to improve a process; they are most effective when you already have a good understanding of the process and the problems in it, and want to focus on implementation.

The length of rapid improvement events varies depending on the scope of the problem to be addressed, ranging from a one-day “mini-Lean” event that focuses on a very specific area for improvement (e.g., a 5S event to organize a supply room) to a five-day rapid improvement event to address a permitting process. Most events follow the steps outlined below. Lean experts highly discourage efforts to shortcut the rapid improvement or value stream mapping process, since much of the power of Lean lies in following the methods closely. For more information about Lean methods, see the Lean Methods Table in Chapter 3 or references in Appendix A.

Rapid Improvement Event Overview

5-day Rapid Improvement Event Agenda Outline

Day 1	Day 2	Day 3	Day 4	Day 5
Training Day Begin mapping and measuring current work process	Discovery Day Measure and analyze current work process	Do Day Create and map new process	Do, Re-Do, Document Day Finalize new process design, estimate benefits, develop action plan, and implement changes	Report-Out Day Present results and next steps

While the terminology may vary slightly, the steps and flow of a rapid improvement event rarely differ when applied to a manufacturing workshop or an office administrative environment. Make sure that your timeline allows room for implementation to occur during the event, and avoid falling into the trap of simply holding a “rapid planning event.” Remember that at the end of the event, your new improvements should already be in place.

Value Stream Mapping Event Overview

One of the main differences between a value stream mapping event and a rapid improvement event is that a value stream mapping event typically focuses at a higher level, mapping the entire chain of processes that create and deliver something of value to a customer. While the general structure of a value stream mapping event is similar to that of a rapid improvement event, the value stream mapping event is typically designed to develop a road map to guide future rapid improvement events that target specific areas where improvement is needed. Value stream mapping events emphasize planning and prioritization of future activities, whereas kaizen events focus on implementing process changes. Some environmental agencies have extended a typical three-day value stream mapping event agenda to four or five days to include additional time for implementation planning.

3-day Value Stream Mapping Event Agenda Outline

Day 1	Day 2	Day 3
Training & Current State Map VSM training; map & analyze the current state of the process	Future State Map & Implementation Plan Map a desired future state for the process; develop an implementation plan	Report-Out Day Present results

Team Leader Daily Agenda

In addition to the project agenda prepared during the scoping meeting (see Chapter 4), it is also important to prepare a *team leader daily agenda*. This detailed agenda is essential for identifying the team leader's responsibilities and actions throughout the project. This agenda also ensures that the flow between the main phases of a Lean project is smooth and that all activities are well executed.

RESOURCES

Team Leader Daily Agenda

Kick Off a Lean Event

Planning for the kick-off of your Lean project is essential for success. This is a key time for senior management to show their support. The kick-off session is typically introduced by the Lean project sponsor and the Lean team leader, and then handed off to the Lean facilitator. The kick-off session should include the following activities.

- **Introduce all team members and observers.** Ask each team member to briefly address a few key questions:
 - Who are you and where do you work?
 - What are your goals for this project?
 - What do you like to do when you are not at work?
- **Capture team members' goals on a flipchart and post them on the wall.** By understanding participants' goals, it is often possible to create improvements in a form and manner that meet diverse needs.
- **Have the project sponsor say some opening words.** This can be helpful to clearly articulate the project scope and boundaries, while encouraging (or even inspiring) team members to work towards the desired outcomes and project goals.
- **Review ground rules for the event.** It is important to review the ground rules that were established during the scoping meeting and post them prominently for all participants to see.
- **Briefly review key performance data and background materials that have been assembled.** This can help anchor the team around desired outcomes and key reasons for working creatively to improve the process.
- **Set a tone for having fun!** Team engagement is key to success. Make the event fun for everyone, including staff and support personnel. If the event facilitator and team leader are fully engaged and show enthusiasm, it will be contagious.

Training

Lean training is typically a core part of the first day of a Lean event. For many people this may be their first event and it is important that all participants be on the same page about how the Lean event will work. Think of this as just-in-time training—where participants learn about Lean immediately prior to implementation. Most organizations continue to have training as part of the kick-off for every Lean event, even if most or all team members have previously participated in a Lean event. Most organizations find that the just-in-time training provides invaluable reminders, gets everyone on the

same page, and serves as an icebreaker to get the team warmed up for several days of intensive activity. Training is also discussed in Chapter 7, as well as in the *Guide to Lean Training* (included in Appendix B).

Set Up For Success

While much of the success of a Lean event rests on careful planning and preparation, managing the event phases is also a significant responsibility. During the Lean event it is easy for the process and participants to get off track. While your Lean facilitator will help direct discussions, it is important for the team leader to maintain the focus on the event's objectives. A few tips for structuring the event agenda and setting the event on a path toward success include the following:

Tips for Structuring the Event Agenda

- **Develop and adjust the agenda daily and post it in a high traffic area for all participants to see.** The agenda should be accessible to all participants as a reminder of the day's events.
- **Conduct daily management briefings.** Short, focused briefings (e.g., 15 minutes) with key managers near the end of each day's work can help them stay informed about the team's progress, allow these managers to engage with the team and learn about how Lean works even if they can't fully participate in the event, and can help prevent a negative reaction in front of the team at the end of the event.
- **Ensure that the agenda will help the team to clarify and evaluate the problem.** The team should ask themselves if solving the problem will help the organization meet its needs, and address opportunities that have been identified (e.g. during a process walk).
- **End each day at a reasonable hour.** Working late into the evening is not necessary and can hurt team morale. If the work is complete, don't hesitate to end early. If longer hours are needed, all participants must agree to this schedule.
- **Provide coffee and snacks.** Lean events can make for long days and take a lot of focus and energy. Provide refreshments and snacks if possible to keep team members comfortable, happy, and motivated throughout the day.

Tips for Managing Activities During the Event

- **Help the team break down the problem and identify performance gaps.** The team should ask whether there is enough information to identify solutions, how performance can be measured, if improvement targets are measurable, and what the desired target output will be.
- **Ensure that the team members understand Lean terms conceptually and in practice.** One of the underlying goals of an event is to identify waste or non-value added activity in a process. While some terminology can sound negative, "waste" in Lean terminology refers to anything that adds cost or time without adding value from the perspective of the customer.
- **When doing process mapping in a Lean event, don't assume that the process works as it is intended to work.** Develop the current state map based on actual data and observations about how the process works in practice, even if that makes the map messy. This may illuminate a less-than-perfect process and even cause some embarrassment to process owners, but it is

important to address the process as it really exists. Expect to use a lot of butcher paper and sticky notes (or full white boards); by the end of the week, Lean event rooms are usually covered with process maps and flipchart brainstorm notes.

- **Promote and encourage creative problem-solving.** It is critical to the success of Lean that the event fosters creative thinking. The facilitator and team leader must work to create space in which all team members feel safe to bring up ideas, even if the ideas seem non-conventional.

Identify Root Causes and Solutions

Your team is now ready to map the process and identify improvements. It is time to analyze the root causes that have caused issues with the process; produce creative ideas for improvements, develop a future state map, and implement improvements.

Current State Process Mapping and Analysis of Root Causes

Before a team can develop a new process, the team must analyze the current process to identify the underlying causes of problems so that solutions—or countermeasures—adequately target and address these problems. There are a variety of techniques that a team leader with some Lean facilitation experience can use for this analysis. In the eight-step problem-solving framework described in Chapter 2, this is the essential “determine root cause” step that precedes develop countermeasures and an implementation plan. Some techniques for identifying root causes include:

- **5 Whys Method:** The approach of asking “why” five times is used to identify the root causes of problems in a process or value stream. By applying the 5 Whys method an agency can identify waste and improvement opportunities. You may find that there are no longer are good reasons why a process is implemented a certain way. The 5 Whys method is integrated as part of the Plan-Do-Check-Act problem solving framework introduced in Chapter 2, as participants
- **Cause-and-Effect (a.k.a. fishbone) Diagram:** This is a useful technique that is used to trigger ideas and promote a balanced approach in group brainstorming sessions where individuals list the causes and effects of problems.

Identifying, Prioritizing, and Implementing Improvements

After identifying the real, underlying causes of problems in the process, your team is ready to develop countermeasures. Countermeasures are the actions that you will take to reduce or eliminate the root causes of the problems that the team has identified. A few tips for innovating to develop new countermeasures during the event include:

- **Brainstorm new ways to eliminate waste or to re-conceptualize a process or value stream.** Stay innovative. Don’t be limited by what has been tried before.
- **Be flexible and willing to try new things.** Keep testing new ideas during rapid improvement events but avoid the paralysis of over-analysis. Create process maps using sticky notes on white boards or butcher paper, so that they can be easily adjusted during the event. Expect to revisit and revise “future state” implementation plans.
- **Test improvement ideas as much as possible in an event before changing the layout or order of a process.** Afterwards, implement the new plan. Lean encourages testing new improvement

ideas and utilizing creative thinking. In Lean events, it is common to develop several iterations of your future process map before settling on one that the team agrees on.

- **Maximize implementation during rapid improvement events.** Rapid improvement events are intended to be rapid *process improvement* events, getting a cross-functional team together for a few days to analyze a process, problem solve, and implement process changes. However, sometimes in the government context, they can default to being only “rapid planning events,” thereby not living up to their full potential. Don’t be afraid to start implementation during the Lean event! Your team’s capability to implement changes in real-time during the event should not be underestimated. You can avoid the fate of delaying changes far into the future by ensuring that you effect change while the team is still at the table. There are a variety of process changes that your team can make during the event, including:
 - Developing new standard work (e.g., checklists, templates, or other user-friendly instructions for the new process) and/or other tools to help implement the new process
 - Training staff on the new process
 - Seeking approvals for process changes
 - Making changes to work areas, databases, forms, etc.
- **Assign homework during the event to track actions and work completed.** Homework includes ideas participants did not have time or resources to complete and can be used to track follow-up actions (see “Lean Event Homework” resource). Your team will also develop an implementation plan for actions remaining to put the new process in place after the event (see implementation plan section below).

RESOURCES

Lean Event Homework

Managing Change During the Event

During the Lean event or project, keep in mind that real change is difficult. There are often a thousand reasons to maintain the status quo. Yet, it is vital to trust the insights and ideas for process improvements which emerge during the Lean event. Lean methods are specifically designed to help people see processes in a new light, making it painfully clear where improvement is needed and opening paths for change that were not previously evident.

Diverse emotions are often stirred when individuals involved in the targeted process watch the Lean team rip into the work they do on a daily basis and highlight large amounts of non-value added activity. Be sensitive to this, remembering that the focus is on the process, not on the performance or accomplishments of individuals. The team goal is to forge a process that increases all participants’ ability to add value and to perform meaningful work. Note that these emotions can be magnified for those who are involved in the targeted process but who may not be participating on the Lean team. Give some thought to how to best reach out during and after the Lean event to others whose jobs may be directly affected by changes made during the event.

Develop an Implementation Plan

On the last day or two of the Lean event, document the action items your team was not able to complete in the event, assign an owner and due dates for individual tasks, and select one person to serve as an overall implementation team leader to manage follow-up efforts. This plan for putting the new “future state” process design into practice and assessing the effectiveness of your new system is part of the PDCA framework and is called an implementation plan. Develop an implementation plan for the actions your team did not implement during the event.

You may choose to have the event team leader continue as the team leader for implementation. Your implementation plan may include the following types of activities, along with clearly assigned responsibilities and due dates.

- Actions needed to put the new process in place
- Communications, outreach, and training activities
- Data collection and reporting activities to measure and evaluate performance
- Schedule for follow-up meetings to report on progress and results
- Trainings for staff who were not involved in the event
- Informing supervisors and other management about process changes (e.g. through daily briefings)

RESOURCES

**Lean Project Implementation Plan
Template**

**Lean Project Implementation Plan
Example**

A well-designed implementation plan—with clear assignments for who will implement action items, by when, and lines of accountability—will facilitate effective implementation during and after the Lean event. Find a template and example Lean Project Implementation Plan in the Resources for this Starter Kit.

While conducting your Lean event, you may discover other areas or processes that would benefit from Lean. While common, it is important to maintain the group’s concentration on the focus of the current Lean event. For tracking purposes, make note of these opportunity areas for future projects.

Lean Project Implementation Plan Example (Full Example in Appendix B)

#	Action	Owner	Start Date	Target Date	Completed	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sept-16	Oct-16	Nov-16	Dec-16	Jan-17	Comments
1	Develop streamlined application form	J. Doe	3/1/16	6/1/16	TBD												On track to be done by due date
2	Create a standard checklist	J. Smith	3/1/2016	4/1/2016	3/15/16												Completed and under review by management
3	Collect data on key process indicators	J. Doe	10/1/2016	1/31/17	TBD												To be initiated once new form and checklist are in use
4	Train staff on the new system	J. Doe	3/1/16	4/1/16	TBD												Behind schedule; coordinating with staff to arrange timing

Find more guidance and tips for developing an implementation plan and using it to track follow-up activities in the *Lean Government Implementation Guide*.

Report Out at the End of the Event

Participants give a report-out presentation at the end of the Lean event. The event sponsor and other senior managers who did not participate in the Lean event often attend the report-out presentation. *Be sure to invite these managers to attend the report-out presentation well in advance.* The report-out serves as a forum for exchanging ideas and informing others of the team's accomplishments. It also helps to solidify the shared experience during the event.

Generally, the presentation includes an overview of the event objectives, activities, and results. A few tips include:

- Assign individual team members with presenting part of the presentation. It is helpful to involve all team members if possible.
- Conduct a “dry run” presentation so team members are comfortable with their roles.

RESOURCES

Report-Out Summary

Event Report-Out Presentation Template

Event Evaluation Form

- Invite people to attend from throughout the organization and even from other organizations. Some environmental agencies have invited agencies from neighboring states to attend report-out meetings.
- Focus on the highlights of participants' experience rather than presenting a verbatim recap of the entire event.
- Use visuals and photos from the Lean event.
- Keep the presentation to less than 45 minutes, leaving approximately 10 minutes for questions and comments by the audience.
- Use the Lean Project Report-Out Presentation Template (see resources) to outline what information to include in the presentation. You can adapt the template to your agency as necessary.
- Hand out an event evaluation form prior to the presentation. This allows participants to share their experiences confidentially and can be used to identify possible process candidates for future Lean events.

Acknowledge Your Team's Work

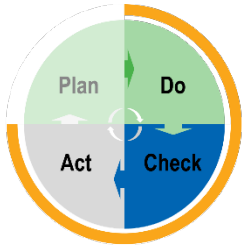
The end of the event is also a useful time to thank participants, planners, and managers for their hard work thus far. This is an important role that the sponsor can play in showing his or her investment in the project, the team's activities, and the follow-up work that will come next. While the project will continue after the event as you implement remaining actions in the implementation plan and measure results, the sponsor and team leader can take these steps to acknowledge everyone's contributions:

- Take a team photo and make copies for all team members.
- Consider providing each team member with a certificate or a small token of appreciation to commemorate the event, which they can display in their offices to help spread awareness of Lean.
- Give credit to support personnel, other staff in the area, and the team members for process improvements and results you've achieved already during the project.

RESOURCES

Lean Event Certificate Template

CHAPTER 6. LEAN IMPLEMENTATION AND FOLLOW-UP



After completing a Lean event or other project meetings to design a new process, effective follow-up is vital to realizing and sustaining the benefits. Your project team will now be completing the rest of project implementation in the “Do” phase, measuring and evaluating your progress in the “Check” phase, and then adjusting and sustaining your performance in the “Act” phase.. Key steps for Lean implementation and follow-up include:

- ➔ **Track and Implement Action Items**
- ➔ **Document the New Process and Communicate Internally**
- ➔ **Measure, Evaluate, and Sustain Results**
- ➔ **Share Transferable Solutions**
- ➔ **Communicate Externally**
- ➔ **Integrate Lean Implementation Into a Continual Improvement System**

Track and Implement Action Items

Follow-up is critical to reap the full benefit of your Lean event. One of the most important products of a value stream mapping event is the “future state” implementation plan, yet that only delivers value to the extent it results in future process improvements. In addition, while rapid improvement events encourage implementation of many process changes during the event (e.g., developing new forms or standard work), there is often a list of follow-up actions that the team was not able to complete during the event. Effective follow-up is also vital to sustaining the team-based culture that is often created during Lean events. Be sure to take time to design a firm implementation plan with clear assignments to ensure that identified actions will be completed on schedule.

COMMON FOLLOW-UP PITFALLS

- Performing and tracking follow-up requires a lot of effort. This effort can get lost if it is not an assigned part of an individual’s daily work.
- Coordinating follow-up solely by email has pitfalls, as it is easy for people to ignore, neglect, or misinterpret email messages.
- If the implementation team leader is offsite and/or does not work directly within the implementation team, it is harder to play a motivational role on follow-up activities.

Action items should be clearly documented and tracked carefully to ensure completion by target dates. Prompt follow-through on incomplete actions is vital to overcome inertia that can cause organizations to stick with or revert to old processes. Move forward with implementation on the Monday following your Lean event.

Identify an Implementation Team Leader

One of the most essential steps to ensure effective follow-up is to identify an *implementation team leader*. The implementation team leader (could be called the “implementation manager,” among other titles) is responsible for ensuring that a clear and effective project follow-up process is established and conducted. Specific responsibilities of the implementation team leader include:

- Schedule and run follow-up meetings (it’s often helpful to have meetings weekly immediately after events, so that you do not lose momentum).
- Lead efforts to identify and remove obstacles to effective follow-up (which may involve working with project sponsors).
- Hold the team accountable for follow-through on actions.
- Ensure that progress is periodically evaluated and corrective actions are implemented, as needed.
- Communicate with the project sponsor to ensure they are aware of implementation progress.
- Ensure that post-event communication plans are executed.

Carefully select the implementation team leader. This role can be filled by the Lean project team leader or another qualified person in the agency. (The implementation team leader should not be one of your agency’s Lean facilitators, however, since they don’t have any process ownership.) The individual should have sufficient stature, authority, and connection to the process to lead follow-up activities, remove barriers, and drive accountability. The individual must also be able to make sufficient time available to ensure follow-up activities happen. It can be helpful to select an implementation team leader who is somewhat familiar with Lean and who is co-located with other team members.

LEAN IMPLEMENTATION TEAM LEADER

The implementation team leader has one of the most important jobs in ensuring Lean efforts are successful, and the value of filling this role with an enthusiastic, organized, and engaged individual cannot be overstated. The implementation team leader shepherds the improvements identified during the Lean event through the follow-up process to become reality. The time commitment involved can be substantial. Be sure that the person chosen to take on this role is ready to work hard to remind team members to begin implementing the new process, and to avoid slipping back into the old way. The implementation team leader should have the full support of organizational leadership and the project sponsor, and should be empowered to make decisions. The presence or lack of an engaged and hard-working implementation team leader can be a determining factor in the success or failure of a Lean project.

Tracking Follow-Up Actions

It is critical to establish an effective system to document and track follow-up actions, and the impacts of those actions, to ensure their completion. In particular, make sure there is a person responsible (an “owner”) and a deadline associated with each action item. Many Lean events show great promise during the report-out, but fail to deliver results when follow-up actions are postponed or forgotten. Be proactive in ensuring that follow-up is done diligently and in a timely manner in order to realize the results of the process improvement effort.

RESOURCES

**Lean Project Implementation Plan
Template**

**Lean Project Implementation Plan
Example**

When tracking actions and results, keep in mind the following tips:

- **Stretch, but be realistic.** While it is important to keep pressure on to quickly address Lean event follow-up actions, try to set the team up for success. Discuss potential obstacles that could derail efforts to complete actions within the first 30 days and brainstorm ways (“countermeasures”) to navigate around these obstacles.
- **Track follow-up actions in a centralized place.** Consider using the implementation plan template provided in this Starter Kit. Someone on the team should be tasked with keeping track of the status of follow-up actions. Post action lists in a shared place onsite. If some team members are offsite, an online collaboration website may be a useful place to track actions and post relevant post-event resources and information. Using color codes on an action list can make it easier to quickly assess status, particularly when there are numerous incomplete actions.

Color Coded Signals on an Implementation Plan

Progress Key

TO BE INITIATED (gray)

ON TARGET (green)

OFF TRACK (red)

COMPLETE (purple)

- **Remind participants to complete their action items.** Implementation of follow-up actions is easy to forget as participants return to their daily activities. The implementation team leader is responsible for reminding others to complete their action items and for scheduling additional follow-up meetings if identified improvements are not on track. An ideal person for this role will be energetic and persistent in reminding fellow team members about their responsibilities.
- **Send weekly emails.** Update the team and the rest of the organization periodically on the progress of follow-up activity after the event. People will be much more inspired to conduct their assigned actions if they are held accountable in a weekly email.

- **Conduct weekly implementation check-in meetings with the core members of the Lean team.** Set up brief weekly meetings with a small implementation team comprised of team members with follow-up responsibilities (see example agenda in textbox). In some cases, the meetings can be piggybacked on another project or staff meeting, if the appropriate team members are present. The meetings can be quick (e.g., 5–15 minutes) and even held standing up—some organizations try to make these check-ins have a distinct feeling and energy that differentiates them from conventional meetings.

EXAMPLE AGENDA FOR WEEKLY MEETINGS

- Review progress in addressing action items
- Identify obstacles to follow-up
- Agree on a plan to address the obstacles
- Update action item list as needed

The weekly meetings should take place until all actions have been completed. If possible, hold these meetings where the work is actually performed to provide an opportunity for the team to talk with workers, see the process in action, and hear firsthand what is going well and where there are obstacles. The tone of these check-in meetings should be one of team-based problem solving. If an individual's follow-up actions are not getting completed, have the team explore ways to free the individual's time or consider alternatives for getting the actions done, including raising concerns to the sponsor who can help remove obstacles.

While it may sound like an unnecessary hassle, holding a 5–15 minute weekly stand-up team check-in meeting can do a lot both to ensure effective event follow-up and to sustain a sense of teamwork.

- **Walk the process.** Implementation team leaders, event sponsors, and other team members should periodically walk around the office, following the flow of the process work and checking in with staff involved in the process. Too often, managers do not leave their offices. Checking in with staff involved in the process sends a message that their work, and the changes made and planned through the Lean event, are important and valued. These interactions can also provide real-time feedback on process performance and follow-up action status, allowing for quick troubleshooting where needed.
- **Conduct monthly report-out meetings.** Most organizations conduct 30-, 60-, and 90-day report-out meetings to supplement the weekly check-in meetings. Six- and 12-month report-out meetings are also important to ensure that improvement results are sustained and to identify the need and scope for potential Lean projects in the future.

These meetings are typically more formal than the weekly check-ins and provide an opportunity to measure process performance and drive ongoing improvement (see the section below on “Evaluate Performance” for more discussion of these meetings). The focus of weekly meetings described above is more tactical—to ensure that event follow-up actions are being completed. In the monthly report-out meetings, the Lean team can think strategically about the new process and evaluate the process performance using key metrics identified during the event.

It is best if the full Lean event team, including consultant support, members from outside the

process, and management sponsors, can attend the monthly report-outs (either in-person or via teleconference). These meetings give team members a chance to see the results of their labor, assist with identifying and removing obstacles to improvement, and strengthen their ownership of the improved process. Many agencies endeavor to make these meetings fun, which helps keep enthusiasm high among all participants.

Document the New Process and Communicate Internally

The new work process resulting from a Lean project needs to be clearly documented and communicated to all involved in the process. Transparency is vital to ensuring that changes are understood and executed. When documenting the new process, keep in mind the following tips:

- **Prepare and post a clear map of the new process.** A concise, visual map of the new process can be a powerful tool for communicating key steps and elements of the process. Think creatively about where to post the map to ensure that it is seen by those who have a role in the process. For example, process maps can be displayed on bulletin boards or white boards in hallways or conference rooms, and/or on a web page on the agency's intranet. Placemat-sized maps can even be developed (with color and graphics) and laminated to hang in employees' work stations.
- **Develop "standard work" procedures.** Standard work—the clear, simple, and often visual documentation of the best known way to do a task—is a highly-effective Lean tool for ensuring that a process is implemented in a clear and consistent manner. Standard work procedures should be concise and use consistent formatting. They should be prominently displayed where work is performed; procedures that sit in binders on shelves do little to influence behavior.

Involving employees who perform the process step to assist with developing the standard work can both increase ownership and capture valuable knowledge. Standard work can help ensure expectations are clear regarding desired work approaches under the new process. Standard work can also help an agency prevent backsliding when staffing transitions occur.

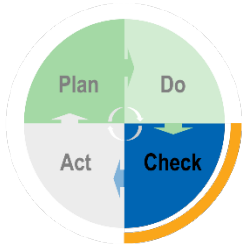
- **Clearly communicate manager support for the new process.** Managers can play a key role in event follow-up by expressing unambiguous support for the new process developed during the Lean event. Managers can also allay employee concerns. For example, some employees may fear that development of "standard work" procedures and a more transparent process may affect their job security or eliminate room for employee creativity within the process. Managers can make it clear that the goal is to free employees to have the time and space to add more value to the process and other activities for which they have responsibility.

In addition to documenting and communicating about the new process, it is important to consider implementing other communication activities that can generate momentum for success.

- Send thank-you letters to all internal and external participants.
- Present project results at a department or division meeting or retreat.
- Post results on bulletin boards, closed-circuit LCD monitors, and/or "exhibit areas" in the agency lobby or common spaces.
- Acknowledge Lean project results or activity at a staff meeting or an agency awards ceremony.

- Write an article in your agency's internal newsletter that outlines your Lean implementation experience, and include an announcement about the project's success in other forms of agency communication.
- Post information and photos of the Lean project, as well as follow-up information, on the agency's intranet/internet.

Measure, Evaluate, and Sustain Results



Regularly evaluating performance and analyzing results is a critical component of Lean. Lean's continual improvement focus means that the Lean project marks the beginning of improvement efforts. Lean leaders and those working in the process need to continue to monitor the performance of the process over time, and be on the lookout for additional process improvement opportunities. It is important to both evaluate performance based

on the key metrics identified during the meeting and to track the extent to which the project achieved the goals and objectives set for the project; and then overtime, if it continues to achieve those objectives. For more information on metrics, see the Lean Project Planning section in Chapter 3, the [Lean Government Metrics Guide](#), and the Lean Metrics Checklist resource.

RESOURCES

Lean Government Metrics Guide

Lean Metrics Checklist

Keep the following tips in mind when evaluating post-event process performance:

- **Discuss process performance at the monthly report-out meetings.** A key focus of the 30-, 60-, and 90-day report-out meetings is to assess the post-event performance of the process and to make adjustments to sustain or improve results. These are times when the Lean implementation team regroups and steps back from tactical implementation activities to report to leadership on progress, results, and next steps. Consider using the questions below to guide these meetings.
- **Use the project objectives as targets for monitoring the performance of the process.** Referring back to the charter and other early documents can help ground the results. It also may be useful to identify milestones that represent interim steps to reaching the final performance objectives.
- **Consider using visual displays or dashboards to show progress towards the performance objectives and to motivate additional improvement efforts.** Visual displays can be powerful communication and motivational tools. It is important to keep them simple, so that they are easy to understand and do not become a time-consuming task to create and update. Many organizations use a whiteboard or color-coded wall chart to track how the process is performing. If updated for the weekly meetings, the chart can serve as a focal point and motivational tool.
- **Consider adjusting key performance metrics to ensure that you have a clear dashboard to monitor the future performance of the process.** For example, in value stream mapping events, you should rely on the initial metrics identified in the current state map and future state maps as indicators of success. These metrics should be reported on at 30-, 60-, and 90-day meetings following the event. Having a few good measures can help identify potential backsliding and

spur action to sustain momentum for improvement. This information can also help identify appropriate timing for a follow-up Lean project, if one is warranted.

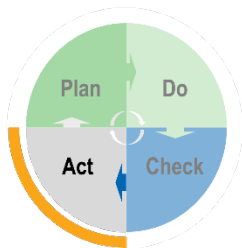
Example Lean Project Results Confirmation Table

Metric	Current State (Before Event)	Projected Future State	Projected % Change	Actual Results*	Actual % Change
Lead Time	80 days	30 days	↓63%	40 days	↓50%
Processing Time	120 hours	70 hours	↓42%	90 hours	↓25%
Process Steps	50	30	↓40%	30	↓40%
Customer Satisfaction (1-5 scale)	2.5	4.5	↑80%	4	↑60%

*Last Measured: 6/15/2016 by Jane Smith

Measurement frequency: Monthly for time and process-step metrics; every 6 months for customer satisfaction survey

Sustain Results



Teams can become frustrated if improvements seem to simply evaporate after a project concludes. Some teams put in lots of work to achieve improvements, only to find that those improvements are not sustained in the future. Take the following steps to help your team sustain excellence long after the end of the project.

- **Routinize accountability.** Monitor the process performance long after the conclusion of the event or project, consistently looking to identify new countermeasures that may be needed and additional improvement opportunities. Implementation managers, project sponsors, and other staff involved in the process should take responsibility and accountability for the continued success of the process.
- **Communicate progress.** Keep the team informed about implementation progress, periodically announcing how long an indicator has remained at an improved level. For example, post a sign in the work area room stating “Celebrating six months of keeping readmission rates below 10 percent.”
- **Set new improvement targets.** Typically, the completion of an improvement effort is celebrated, but little is done to celebrate the maintenance of that improvement. Make definite plans in advance to celebrate continued success and to reflect on the team’s progress. Set a new aim or goal and try to improve even more.

KEY SUSTAINMENT QUESTIONS

- Are all employees following the process as designed in the project (or as modified since the project)?
- Is there evidence that all employees, including those new to the area, have been trained on the new process?
- Is process performance being measured and reported as set forth in the implementation plan?
- *For EPA projects*, have results been reported to EPA LEANtrack?
- Is the implementation team leader monitoring and supporting compliance with the new process?
- Is the appropriate leadership informed of and engaged in the process?
- Are consequences in place for not following the new process?
- Have any unintended consequences (positive or negative) arisen? Check with downstream customers.
- Are workers pleased with the improvements? Do they feel their work has been simplified?

Learning from Failures

Sometimes, despite the best preparation and planning, Lean projects do not achieve some or all of their desired goals. It is common for organizations to conduct one or more Lean projects that are not viewed as a success. The text box below lists several factors that can lead to a Lean project being viewed as unsuccessful. It is important to remember that such “failures” do not mean that Lean cannot work in your agency. Leader organizations use these “failures” as teaching moments. In fact, the Lean process itself is intended to be a continual improvement learning process. If your organization experiences a “failure,” diagnose the project and make a follow-up plan that directly addresses the key factors that undermined past success.

WHY DO SOME LEAN EVENTS “FAIL”

- ✓ **Inappropriate Scope:** Event scale or scope was too large to address in a 4-5 day event. The size and complexity of the process should instead have been addressed with a value stream mapping event followed by a series of kaizen improvement events.
- ✓ **Lack of Visible Management Commitment:** Unless managers visibly commit to and actively support the improvements and process changes, it is easy to backslide to business as usual.
- ✓ **Poor Event Facilitation or Support:** Failure to adequately prepare for a Lean event limits what can be accomplished; similarly, lack of a skilled facilitator can inhibit progress during a Lean event.
- ✓ **Inadequate Follow-up:** Insufficient attention, resources, and accountability can prevent the new process from being successfully implemented in a reasonable timeframe.
- ✓ **Strategic Misalignment:** When multiple autonomous departments or agencies are involved in an event, conflicts can emerge due to differences in mission and strategic direction. This misalignment can undermine management support for follow-up and implementation activities.
- ✓ **Unrealistic Expectations:** Expectations for what the event could achieve were not realistic given the process type, complexity, or other factors.

Share Transferable Solutions

Although not all Lean projects are successful, many produce impressive gains in efficiency and process quality. To encourage continual improvement at your organization and with your partners, your team may be able to share strategies, tools, or process changes that worked in your project with other agencies or with other parts of your agency that might benefit from them. Sharing transferable solutions with others is a key part of the PDCA framework.

When determining what to transfer, consider the four dimensions of transferring success:

- **Value:** Did the project produce meaningful results? Which process changes were essential to producing the results?
- **Similarity:** Did the project address similar challenges (e.g., root causes of inefficiency or quality issues) to the challenges in the new process?
- **Transferability:** Were the process changes documented in standard work (e.g., checklists, templates, process maps, etc.) that a new project team could review and adapt?
- **Connectivity:** Is there a representative from the Lean project who could help others learn more about the issues and solutions identified?

Steps you can take to help share project successes include:

- **Identify and reach out to process managers or owners of similar processes** to let them know about your project and ask whether they or staff would be interested in learning more.
- **Designate a representative or coach** from your project who can answer questions about the project and help share knowledge to others.

- **Share materials from your project with others**, either directly with those who express interest in the project or by making the charter, tools, poster, report-out presentation, or other resources available through a shared server or website.
- **Translate relevant Lean outputs for other organizations.** To make it easier for others to understand the process improvements from your project and how they might be used elsewhere, you can distill the essential elements of your new approach and document them in a way that others can easily understand and use. This may be as simple as compiling your team's standard work for the process and communication materials into an integrated package or website, so that it can be more easily understood and used by others.
- **Find opportunities to tell peers about your project** through presentations, meetings, webinars, or conference calls. It is important to describe the problems your project addressed, including any root causes, the results of the project, and any process changes that could be useful elsewhere (e.g., standard forms or templates), so that others can evaluate how similar the problems your project addressed were to the problems that they face.

RESOURCES

Lean Government Implementation Guide

Lean Replication Primer

Lean Project Poster Template

Learn more about how to effectively share and transfer solutions from Lean projects with others in the *Lean Government Implementation Guide* and the [Lean Transference Primer](#).

Communicate Externally

External communication about process improvement efforts can go far beyond making process description and performance information available to key stakeholders and the public. Spreading the word about Lean efforts can be a powerful means for bolstering enthusiasm and generating interest in Lean throughout your organization and others. In addition to accomplishing the important task of making sure that external parties involved in or affected by a process are sufficiently aware of changes made, these communication efforts will help to ensure the longevity of your Lean efforts by helping to create a network of people with an interest in process improvement.

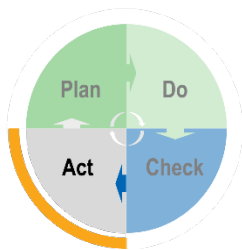
Basic information that should be communicated externally about the project includes:

- Brief description of the process and the problem (What was not working well?)
- Basic information on the project (What? When? Who?)
- Key results related to time, cost, quality, and other outcomes
- Key differences between the old process and the new process and how those changes will affect your external audiences, if appropriate (What has changed or will change? What types of improvements were made?)
- Brief statements on the significance of the improvements
- Outline of future improvement plans

Several components of an effective external communications strategy will help to spread Lean efforts outside your initial project. Examples include:

- **Cast a wide net when sending invitations to the event report-out.** At the Minnesota Department of Administration, invitations to event report-outs are distributed to anyone interested in coming, and some report-outs have been attended by as many as 100 people.
- **Create a case study and/or poster** describing the goals and results from your project. Include photos or other graphics to make it more visually appealing. For links to EPA and State environmental agency examples, see the EPA Lean Government website (<https://www.epa.gov/lean/lean-government>) or the State Lean Activity webpage (<https://www.epa.gov/lean/state-lean-activity>)
- **Reach out to your customers and key stakeholders** to identify any changes to the process that affect their involvement.
- **Use your organization's media channels (e.g., blog, newsletter, website) to communicate about your Lean efforts and generate enthusiasm.** Several state agencies, including Ohio and Minnesota, publish a Lean newsletter summarizing recent Lean activities to inspire interest in efforts in other areas. Write an article for your agency's website or public newsletter that outlines your Lean implementation activities.
- **Maintain an attractive and interesting website** that informs people about Lean activity in your organization. Post results from projects and team photos, being sure to keep content updated and "fresh."
- **Conduct a webinar to brief key stakeholders** and interested members of the public on process changes and improvement results.

Integrate Lean Implementation into a Continual Improvement System



While Lean methods can be used for one-time, one-shot improvement efforts, the real value of Lean lies in its focus on continual improvement. It is important to connect follow-up efforts for individual Lean projects into your organization's overall continual improvement system, such as the one described in Chapter 2. The more effectively your organization integrates follow-up into your organization's culture and systems, the easier it will be to sustain success and prevent back-sliding. This is an important part of the "Act" phase of the PDCA framework. Make your new improved processes become business as usual, share

transferable solutions with others in your organization and outside peers as well, and sustain and improve on the solutions over time. Three activities are vital for sustaining Lean improvements across organizations: 1) coordinate project implementation, 2) continue to support processes with future Lean projects, and 3) cultivate employee ownership of process improvement.

Coordinate Project Implementation

The event follow-up activities discussed earlier directly prevent back-sliding by focusing attention on completing open action items and addressing challenges that may have arisen after the Lean event. As described above, it is useful to designate an implementation team leader to remind people about their

assigned follow-up responsibilities and to ensure that implementation remains on-task. That person needs to have the persistence, enthusiasm, and sufficient authority to coordinate the implementation team throughout the entire follow-up process. Your agency's Lean initiative can provide critical support to these team leaders by coaching them on their roles and responsibilities, providing resources such as tracking tools and other templates, and assisting with broader agency communications.

The brief weekly check-in meetings, coupled with 30-, 60-, and 90-day report-out meetings, are essential investments to ensure that the results from Lean projects are sustained and enhanced. These meetings alone, however, may not be enough to ensure that the process improvement results estimated during the event can become reality. Utilize tracking tools to monitor which follow-up actions have and have not been completed, and distribute these tracking sheets to team members in weekly emails. Taking these steps to make sure that estimated benefits of Lean projects become reality is crucial to establishing a lasting process improvement culture throughout your organization.

Continue to Support Processes with Future Lean Projects

Lean is not a one-time effort. Follow-up is essential to ensure that the new process takes hold, runs smoothly, and achieves the desired results. Moreover, significant improvements can result from conducting periodic improvement projects on the same process every one to five years or more frequently. World-class Lean organizations are often amazed at the magnitude of process improvement results that can be achieved when processes are targeted multiple times over a few years. Some Lean experts say that a process is not truly "Lean" unless it has gone through at least five rapid improvement events! Fresh thinking and perspectives often unleash time, quality, and cost improvement ideas that could not have been imagined during the first Lean project. Other Lean methods, such as 5S and visual controls, focus on sustaining Lean improvements by keeping workspaces well organized and making potential problems visible so they can be quickly addressed.

Cultivate Employee Ownership of Process Improvement

Empower employees involved in a process to become active stewards of the process. By actively engaging those involved in a process to "own" its activities and performance, it is possible to identify and address improvement opportunities "on the fly." Managers should routinely ask employees for their improvement ideas and process "malfunctions" should be examined for lessons and improvement options. Another way to get fresh ideas is to give employees the opportunity to exchange roles for a few hours and learn how different parts of a process work. The new vantage points can help team members see the process—and improvement opportunities—in a new light. Consider developing formal or informal systems for collecting improvement suggestions from employees (such as idea boards) and make sure to recognize employees for their suggestions and initiatives.

Implementation is an integral component of a successful Lean project. It is hard work and requires a lot of effort, but is key to maintaining the momentum of fast-paced improvement inspired during the Lean project. In addition, conscientious follow-up activities help people to develop a continuous improvement mindset.

The next chapter discusses how to expand your Lean success beyond your project and transform your organization into a culture of continuous improvement.

CHAPTER 7. DIFFUSING LEAN ACTIVITY AND BECOMING A LEAN ENTERPRISE



Doing one or more Lean projects at a government agency can be an eye-opening and exciting experience. Observing rapid and dramatic improvements in an agency process can offer a glimpse into what is possible to accomplish—even in a large government bureaucracy. Yet running a few successful Lean projects is not enough to realize the full gains from process improvement efforts, nor is it enough to develop a continual improvement culture across an agency. The power of Lean is truly realized when individuals in an organization internalize a proactive, problem-solving approach and the organization becomes adept in supporting improvement as part of daily work practices. It is important to remember that diffusing Lean into an agency is a critical part of the overall Lean work. After the first few Lean projects, inevitable questions arise. As the image to the left illustrates, diffusing Lean activity involves a continual series of PDCA loops, as you continue to improve one process after another in a cohesive approach.

- ➔ **What does Lean mean for our agency for the long term?**
- ➔ **How can we sustain and diffuse the successes of our initial Lean activity?**
- ➔ **How can we use Lean to promote a continual improvement culture in our agency?**

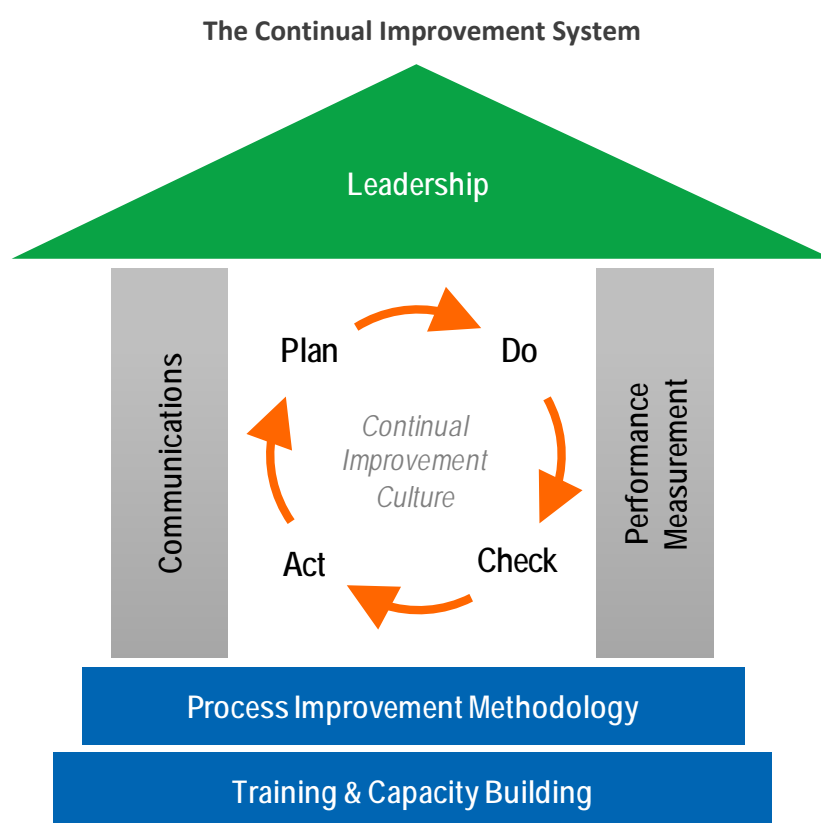
Responses to these questions can range significantly—from “we are done with Lean” to “let each part of the agency use Lean methods on its own” to “we are going to incorporate Lean into how our agency does its business.” Each agency must decide whether it sees sufficient value to continue using Lean. If an agency decides to continue with Lean, then it must decide how to proceed. There is no right answer to this question, but failure to strategically consider it can have serious consequences. At best, failure to think strategically about sustaining and diffusing Lean activity will increase the cost of capacity building, Lean training and facilitation, and Lean tool development. Far worse, one or two poorly planned and executed Lean projects can sour the agency on Lean and undo past progress. Furthermore, given the frequency of changes in agency leadership, initiatives that are not well-planned or entrenched in the agency can be vulnerable to elimination.

This chapter is designed to help you think strategically about how your agency can sustain and diffuse Lean continual improvement activity. The topics covered in this chapter include:

- Understanding the Lean Journey
- Getting Started with Lean Diffusion
- Four Deployment Models for Lean Diffusion
- Future Directions: Building a Lean Continual Improvement Agency

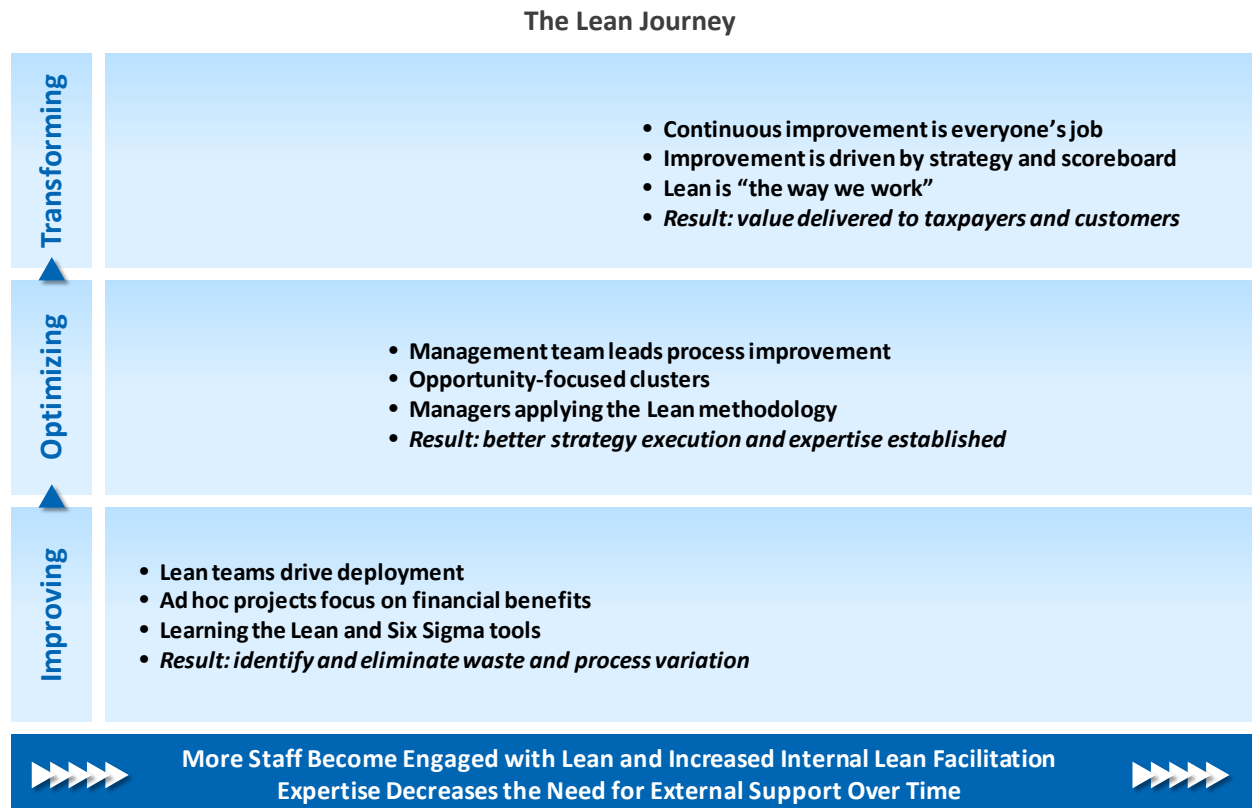
Understanding the Lean Journey

As described in Chapter 2 and shown in the “house” diagram below, there are five key elements of a continual improvement system that Lean supports. First, leaders provide goals, direction, and support to enable process improvement activities. Following this direction, agency managers and staff use Lean methods to eliminate inefficiencies, simplify processes, and allow more time to be spent on “mission critical” work. This Starter Kit is one tool your agency can use to support the Lean process improvement methodology for your agency. Building from this foundation, applied Lean training ensures that employees can effectively participate in and lead process improvement activities. Next, targeted communications keep internal and external audiences informed about the agency’s Lean efforts and their importance. Finally, a performance measurement system allows the agency to track and evaluate progress over time and make adjustments to implementation activities as needed.



Fully developing this continual improvement system and fostering culture change does not happen overnight. Lean organizations often describe their efforts as a “journey,” consisting of various phases of Lean activity and culture change. Often this involves starting with pilot testing Lean in one or two areas to gain experience and see how it best can be applied within an organization’s culture. Following initial piloting, an organization may move towards more strategic uses for Lean to address organizational priorities as well as persistent problems. Some organizations may then take Lean to the next level, embarking on a transformation of the organizational culture that relies not only on Lean events or projects to drive change, but also embeds process improvement in the daily work practices of

employees. The figure below describes three key stages that often occur as an organization matures in its use of Lean: improving, optimizing, and transforming.



The time that an organization takes to shift between these stages can vary, and it can take 3–5 or more years before an organization fully adopts a Lean culture. The Lean journey does not happen overnight, and that the pace and effectiveness of the transformation depends on multiple factors, including leadership support, organizational culture, the sense of urgency for change, available resources, and implementation strategy. The road on the Lean journey is not always smooth, and many organizations implementing Lean experience a greater chance of failure between 6 and 18 months into their Lean journey. Failure during this period of a Lean journey often occurs due to a combination of three factors:

- *A lack of strategic focus* to the Lean activities
- *A lack of management passion and commitment* to successful Lean implementation
- *A lack of staff time and money* devoted to support the journey

During this period, initial excitement and momentum from the first few Lean projects can subside, especially without active leadership or a clear plan for continuing and propagating Lean activity. These are key reasons why leadership engagement and communications are critical to sustaining success with Lean process improvement efforts.

Getting Started with Lean Diffusion

While a hands-off, grassroots approach to Lean may be appealing in some agencies, some cross-agency coordination and planning is invaluable for effective Lean implementation. Lean leaders in the public and private sectors have found strategic ways to expand Lean activity at a lower cost, with more consistency, and better results than if they implemented Lean in a piecemeal approach. There are six important steps for diffusing Lean within an agency.

LEAN DIFFUSION STEPS

1. **Implement Lean in several areas and share results**
2. **Send clear and consistent supportive messages from agency leadership**
3. **Establish an agency Lean coordinator**
4. **Build a core Lean team and expand staff capacity through training**
5. **Develop a consistent approach and tools for implementing Lean**
6. **Keep at Lean to sustain momentum, but do not push too hard too fast**

1. Implement Lean in Several Areas and Share Results

The best way to sustain, expand, and build momentum for Lean activity is to achieve results and to share them throughout the agency. Identify several departments or programs that may be good places to conduct Lean events or projects and to build staff experience with Lean. Conducting isolated projects throughout an agency can yield good improvement results and expose many personnel to Lean, but this approach will not necessarily build centers of Lean experience that are sufficient to sustain organizational interest and attention and to champion Lean activity. Many Lean experts tout the value of creating “Lean learning labs”—places where Lean activity is concentrated that can serve as models for Lean deployment and learning elsewhere in organizations. There is no better way to learn about Lean than to experience it firsthand through Lean projects, and there is no better way to realize what Lean can do for your agency than to try it out.

After your first Lean project, when selecting areas for further Lean activity, consider these five factors in addition to the criteria described in chapter 3 for selecting a Lean project:

- One or more processes in the area have significant improvement needs and/or opportunities for impressive results
- Managers and/or key personnel in the area are highly receptive to using Lean
- Managers and/or key personnel in the area are well respected throughout the agency and could become an effective sponsor and/or advocate for Lean within the agency
- Personnel in the area have previous experience using Lean methods

- Your organization already has a culture that emphasizes performance measurement and striving toward measurable objectives

After completing Lean projects, share the results and let them speak for themselves. Chapter 3 includes information on measuring and communicating Lean results. Prepare a brief, attractive presentation that shares key information on Lean projects conducted throughout the agency. Involve key personnel from other departments and divisions in the report-out presentations for Lean projects to help introduce key personnel and “idea leaders” within the agency to Lean. Consistently communicate messages about why Lean is important to the agency and the results that have been achieved through Lean projects and implementation activities. Once people discover that Lean can make their jobs easier and deliver real results, momentum will build.

2. Send Clear and Consistent Supportive Messages from Agency Leadership

Strong, continued support from agency leaders is critical to both effective implementation and diffusion of Lean. Without the personal and visible support of senior managers, the effectiveness of Lean projects can be undermined. Effective Lean implementation requires sustained attention and resources, along with an

openness to change. Visible leadership commitment and support are also vital to encourage other parts of an organization to step forward and try Lean. Leadership commitment is crucial to ensuring that the agency will back and support the work of Lean practitioners, both during specific Lean projects and in broader organizational deployment of Lean. The commitment and support of leadership should be evident in their involvement in the selection of projects that address strategic priorities for the organization.

Without consistent support from leaders, some Lean projects may not ever achieve sustained results. Leaders must set the agenda for change, define goals for change, actively participate in improvement projects, dedicate staff time and resources for improvement efforts, provide visible support, hold people accountable for achieving performance metrics, remove barriers to successful implementation, and recognize accomplishments. These and other actions that Lean leaders must take are outlined in the box below and in EPA’s [*Lean Leadership Guide*](#).

RESOURCES

Lean Leadership Guide

KEY ACTIONS FOR LEAN SPONSORS

Create a clear and compelling case for change.

- Communicate continually with internal and external constituents
- Address employees' questions about "what's in it for me?"
- Define success—and celebrate when it occurs

Build the infrastructure for change.

- Identify and support projects that address strategic priorities for the organization
- Align employee rewards and compensation to support process improvement efforts
- Clear obstacles to change and improvement as they arise
- Identify and nurture leaders who emerge during Lean implementation

Establish metrics and reinforce accountability.

- Expect follow-through and track open actions
- Encourage the use of visual management approaches to share results

Visible leadership is also critical to help many managers who are new to Lean overcome the perceived risk of trying a new and unfamiliar process improvement method.

POSSIBLE INITIAL REACTIONS TO LEAN

- ✓ We've already tried that.
- ✓ We're too busy to take time out for an improvement event.
- ✓ We don't have time to focus on process improvement.
- ✓ It will cost too much to do a Lean event.
- ✓ It will never work in our area or department.
- ✓ Nothing's broken, so why fix it?
- ✓ We're not like a manufacturing company; those concepts and tools don't apply to us.

Most organizations that embark on a Lean journey soon discover that the excuses for not trying Lean are unfounded and that the payback from Lean efforts can be quick and dramatic.

3. Establish an Agency Lean Coordinator

Once your agency has committed to implementing multiple Lean projects, it is critical to identify an **agency Lean coordinator** to help guide and keep track of Lean activity and associated measurable results throughout the agency (see Job Description resource). An agency Lean coordinator can help prevent unnecessary rework by linking those interested in using Lean with potential consultants or facilitators, training resources, lessons learned, and other helpful information. Some government agencies have found it useful to task the Lean coordinator with leading the development of an organizational Lean deployment strategy. Such a strategy can support organization-wide Lean activity and ensure that it is connected to the organization's overall mission, strategic plan, and other priorities. An agency Lean coordinator can also track the use of Lean across other agencies, and track the results of those efforts, and look for benchmarking and information sharing opportunities. The Lean coordinator can track process improvement efforts across the agency and ensure that implementation happens after each project (see Agency-Wide Lean Tracking Sheet resource).

RESOURCES

Agency Lean Coordinator Job Description

Agency-Wide Lean Tracking Sheet

While it is helpful to have a single point of contact for your agency's Lean initiative, especially for communications purposes, that doesn't mean that the "coordinator" should necessarily be the only person coordinating Lean activities across your agency. In fact, it is critical for leaders across the agency—or the department/division within which you are implementing Lean—to be actively engaged in your organization's Lean process improvement efforts. Some Lean experts advocate establishing a **Lean Steering Committee** to enable alignment across the leadership team for process improvement efforts, as well as to communicate activities and results, evaluate progress, gather and prioritize improvement ideas, and allocate resources. The agency Lean Coordinator can serve as the central focal point for a Lean initiative. They can work under the direction of senior leadership and/or a Steering Committee to develop and support the agency's Lean deployment strategy, including communications, training and capacity building, performance measurement, and the regular application of Lean methods.

4. Build a Core Lean Team and Expand Staff Capacity through Training

Begin to build Lean expertise by having a few employees participate in multiple Lean projects across your agency (and/or at other public agencies or organizations). The best way to learn about Lean and become skilled as a Lean practitioner is by observing and participating in Lean projects. While training courses can be useful, they are no substitute for time spent in Lean projects, even if the projects are focused on processes different than those the individual works on.

RESOURCES

EPA Continuous Process Improvement Training Strategy

Many organizations report that assistance with Lean event facilitation and deployment from experienced Lean consultants is essential until an organization has developed sufficient internal expertise. Leverage consultant support for Lean events to advance broader internal capacity-building and deployment goals. Over time, this effort can reduce dependence on Lean consultants for event facilitation services, which can be costly. Many experienced Lean organizations retain some level of strategic advising and support on Lean deployment from Lean consultants. Another strategy that some

organizations take is to hire Lean expertise by bringing in one or more experienced Lean practitioners who have successfully led Lean events or deployment efforts on administrative processes elsewhere in public or private sector organizations.

Invest in several employee team members who demonstrate interest and skills with Lean and related skills such as facilitation and change management. Get these team members to participate in as many Lean projects as possible. Give them increasing responsibility for leading Lean teams and facilitating Lean events (sometimes with consultant help). While it may take a couple of years of practice to independently lead Lean efforts, these team members can assume significant responsibility for Lean application quite quickly, reducing the need for consultant time. As discussed below, building a Lean training program can speed capacity-building efforts and ensure the use of consistent methods.

5. Develop a Consistent Approach and Tools for Implementing Lean

As Lean is diffused across an organization, avoid having each office or department reinvent existing Lean tools or processes. Wherever it is appropriate to do so, use standard work: a basic component of Lean that logically applies when determining how Lean will be rolled out across an agency. This Starter Kit provides a variety of templates that can be adapted to meet your agency's needs. Experienced Lean practitioners report that without a consistent organization-wide approach, it is difficult to replicate performance improvements from one department to another. Many organizations have found that a consistent approach to implementing Lean methods and tools can still accommodate sufficient flexibility to meet the needs of diverse offices, programs, and processes.

Government organizations should consider employing a common approach for selecting and contracting with a Lean facilitator, until sufficient in-house Lean facilitation capacity is developed. This can be an important way to ensure that each project or event uses a common approach to Lean. Agencies also may find that a standardized approach may reduce transaction costs associated with hiring and retaining Lean consultants. For example, some consultants may tend to emphasize rapid improvement events, while others may place more emphasis on the Six Sigma Design-Measure-Analyze-Improve-Control (DMAIC) process. If an agency uses different terminology, tools, and processes for each project, it can make broader organizational communications and training more challenging. When an organization is ready to build internal capacity for Lean facilitation through training and certification, a single Lean training curriculum will enable internal Lean facilitators to implement Lean projects throughout the agency.

6. Keep at It to Sustain Momentum, but Do Not Push Too Hard Too Fast

Successful Lean implementation requires a lot of hard work, but the results are often well worth the effort. In general, the more Lean projects your organization conducts, the more process improvement gains are possible. However, as noted in this Starter Kit, it is important to remember that supporting the activities during a Lean event is only one stage of Lean process improvement efforts; careful scoping and preparation for events and dedicated attention to implementation are critical to long-term success. Consider your organization's overall improvement goals and needs, and your organization's culture when choosing the appropriate level of investment in Lean to sustain interest and momentum.

While it is not uncommon for leading Lean organizations in the public and private sector to run numerous Lean projects each year, remember to pace yourself. Moving too aggressively with Lean when an agency is not ready can quickly turn people off and make it seem like too much attention has shifted

to Lean efforts, at the expense of the agency’s core mission. Organizations that are well into their Lean journeys often find that it’s useful to have one “Lean event week” during a month, with multiple process-improvement events scheduled during that time. Several state environmental agencies have successfully used the concept of Lean event weeks to make Lean consultant resources go further (with one consultant supporting multiple events) and create momentum for Lean efforts.

According to many Lean experts, once an organization has matured on its Lean journey, a good general rule of thumb is to hold at least one Lean event per year for every 10 employees (the $n/10$ rule).¹⁷ Lean implementation at that level can drive double-digit annual performance gains, but that scale and pace of implementation may not make sense for many organizations, especially those early on in their Lean journeys. The pace and level of investment in Lean efforts at an organization are key questions for leadership to answer, and they influence the choice of deployment model, discussed below.

Four Deployment Models for Lean Diffusion

Once an agency decides to expand its use of Lean, the challenge shifts to how to effectively and efficiently proceed. There are four main models for deploying Lean in an organization, including: *Agency-Wide (Transformative)*, *Department/Division (Transformative, but Selective Application)*, *Targeted (Strategic)*, and *Grass Roots (Opportunistic)*, which are further described in the table below. These models range from sporadic implementation initiated by individual sponsors potentially yielding pockets of success to strong top-down leadership and systematic investment that may yield more significant and sustainable results.

LEAN DEPLOYMENT MODELS		
Model	Characteristics	Deployment Considerations
Agency-Wide Model (Transformative)	<ul style="list-style-type: none"> ➔ Top down driven ➔ Comprehensive ➔ Major culture change ➔ Rapid, highly visible deployment ➔ Focused on strategic priorities 	<ul style="list-style-type: none"> ➔ Requires significant, sustained investment and solid leadership from top management ➔ Large infrastructure and full-time staff ➔ Significant planning and management ➔ Integration with other management and measurement systems ➔ Need for common language and problem-solving methodology ➔ Need to address cross-agency processes ➔ 5+ years to achieve lasting culture change

¹⁷ The $n/10$ rule is from George Koenigsaecker, *Leading the Lean Enterprise Transformation*, New York: CRC Press, 2009.

LEAN DEPLOYMENT MODELS		
Model	Characteristics	Deployment Considerations
Department/ Division Model (Transformative, but Selective Application)	<ul style="list-style-type: none"> → Department leadership but agency management support → Department pilot for agency → Comprehensive at the department level → Culture change 	<ul style="list-style-type: none"> → Similar to agency-wide model but on a smaller scale → Easier to start due to smaller scale → Slower pace is possible; scale up after initial success → Greater use of consultants and outside training → Less integration with agency-wide management systems → Risk of not getting beyond the department level
Targeted Model (Strategic)	<ul style="list-style-type: none"> → Top management leadership → Focused on a few specific agency problems → Driven by a desire for strategic impact → Culture change is not a deployment objective 	<ul style="list-style-type: none"> → Easy to get started → Can work in smaller agencies → Infrastructure needs are small; generally use contracted resources → Little systematic integration with agency-wide management systems → Quick results because problems are identified ahead of time → Risk of not sustaining the gains
Grass Roots Model (Opportunistic)	<ul style="list-style-type: none"> → Originates at the bottom of the agency → Highly motivated individuals lead the effort → Project- or problem-specific → Culture change is not an objective 	<ul style="list-style-type: none"> → Relatively easy to do but difficult to sustain over time → Very vulnerable to changes affecting staffing → Few if any initial infrastructure needs; no integration with management systems → Often rely on external Lean consultants → Lean implementation approach may vary across agency → Can generate good results from individual projects → Track record for sustainable improvement is not good

Most highly successful organizations in the public and private sectors have found that having a guiding vision and clear goals is critical for effective change management. Long-term agency goals, resources, and leadership commitment should drive which model is selected. Your organization should pursue a range of goals as you progress through your Lean journey: beginning with targeted and specific goals, then optimizing as managers lead process improvement and better strategy execution is established, then progressing into a transformative culture change where continuous improvement is everyone's job.

When selecting a model for diffusion, careful thought should be given to three factors: desired impact, implementation scale, and organizational readiness (see table below).

DIFFUSION MODEL SELECTION FACTORS		
Desired Impact	Implementation Scale	Organizational Readiness Factors
<ul style="list-style-type: none"> ➔ Business Transformation <ul style="list-style-type: none"> ▪ Agency-wide deployment ▪ Major culture change ➔ Strategic Improvement <ul style="list-style-type: none"> ▪ Targeted deployment on critical problems ▪ Projects necessary for success or survival ➔ Problem-solving <ul style="list-style-type: none"> ▪ Specific operational problems ▪ Incremental improvements in agency performance 	<ul style="list-style-type: none"> ➔ Entire agency ➔ Department/division ➔ Project/section/team 	<ul style="list-style-type: none"> ➔ Culture ➔ Past process experience ➔ Management team ➔ Stability

Select a deployment model and adapt it to best fit your agency’s situation. You may also choose one deployment approach during your organization’s initial efforts with Lean, and then shift to another deployment approach after a few years of implementing Lean methods. There is no one “right” Lean deployment model, although many Lean leader organizations voice strong support for the agency-wide model, since it is the only one that can achieve cultural change throughout an organization. Regardless of which model is selected, management support and commitment is an essential ingredient for long-term success. Consider developing a five-year improvement plan that realistically charts where you want to be in five years compared to your current performance and that outlines what it will take to get there in terms of time, resources, leadership, outside expertise, training, and communications.

COMMON OBSTACLES TO BUILDING A LEAN ENTERPRISE

According to Lean author and consultant Karen Martin, common obstacles that organizations face when building a Lean enterprise and potential strategies to address them include the following:

- Weak or no leadership buy-in (Strategy: Leadership engagement and executive sponsors)
- No sense of urgency (Strategy: Communications that emphasize the pressures on the agency, the unknown, and the need to change)
- Non-existent or unrealistic strategy (Strategy: Develop clear goals and a realistic, five-year plan)
- Lack of alignment around improvement strategy (Strategy: Establish a Lean Steering Committee)
- Lack of understanding or missing skills (Strategy: Establish clear learning objectives for training, identify appropriate participants, and ensure it is connected to real-world application)
- Inadequate improvement resources (Strategy: Leverage external resources to provide learning opportunities; internal resources can be a combination of dedicated and shared responsibility)
- Slow results (Strategy: Focus year one on quick successes and don't attempt to tackle your toughest problems first before you've learned more about how to do Lean projects successfully)
- Results not communicated (Strategy: Use multiple communication means, such as an Intranet, displays in hallways and break rooms, closed circuit LCDs, paycheck stuffers, newsletters, and meetings)
- Processes are not monitored and continuously improved (Strategy: Establish a process owner who monitors a few key performance indicators for the process, reports on performance, and leads improvement efforts as needed)
- Everything waits for a rapid improvement event (Strategy: Establish employee suggestion boards and other ways to encourage individual initiative and "just-do-it" actions)

Source: Adapted from Karen Martin & Associates, "Building a Lean Enterprise: Navigating the Common Obstacles to Success," Webinar Presentation, 13 May 2010, www.slideshare.net/KarenMartin2/building-a-lean-enterprise.

Future Directions: Building a Lean Continual Improvement Agency

Lean can be much more than a process improvement tool to be used only when a process seems broken. There are many opportunities for environmental agencies to implement Lean to improve existing programs and processes or to efficiently create new ones.

Develop New Programs, Regulations, and Initiatives Using Lean

While improving existing processes is important, environmental agencies can realize significant value by designing new programs and processes to be efficient and effective from the start. Lean process design methods such as Lean Startup, Design for Lean Six Sigma, and Production Preparation Process (3P), described in the Lean Methods Table in Chapter 3, offer powerful approaches and tools for designing new processes to be highly effective and efficient. These methods can also be used to design or redesign products (e.g., an agency newsletter or permit application), processes, and programs. Once your organization is familiar with basic Lean principles and methods, such as identifying "wastes" in office processes and the process mapping used in rapid improvement or value stream mapping events, you

may begin to identify opportunities where Lean thinking could be applied to design better, more efficient processes from the beginning. (See Appendix A for a Bibliography of Lean References.)

Improve and Manage Agency Value Streams

Most high-performing Lean organizations work to manage and improve key value streams—the full chain of processes and activities that deliver value to customers or stakeholders. For an environmental agency, this could be the services the agency provides to society and to key constituents and working to optimize these flows of value. This may lead to more holistic approaches to environmental management that go beyond the traditional air, water, and waste silos.

- For example, a state or local environmental agency could look comprehensively at how it delivers all environmental protection services (permitting for air, wastewater, and hazardous waste impacts, as well as technical assistance with pollution prevention and sustainability initiatives) to businesses seeking to locate in the state, rather than focusing on optimizing just air permitting or another part of that value stream.
- Some municipalities have taken this customer-oriented view and set up neighborhood service centers where citizens can access services from multiple government departments in one place.
- Similarly, some states have developed one-stop business centers to support streamlined business licensing and permitting.

Lean approaches offer some useful lessons in how to effectively plan, organize, and manage organizations to optimize their value streams. Such lessons may open up exciting possibilities for environmental agencies.

Link Lean Improvement Projects to Agency Mission and Strategy

As organizations make the transition to becoming Lean continual improvement enterprises, they are increasingly linking their improvement activities to their strategic planning and goal-setting processes. A powerful method known as “strategy deployment” (also known as *hoshin kanri* and policy deployment) elegantly links the strategic goals of an organization with a cascade of increasingly specific programs and activities that support those goals. Strategy deployment typically has a one- to five-year focus (updated annually), taking longer-term strategic planning goals and objectives and honing in on what needs to be accomplished in the coming year.

A3, as noted in the *Lean Methods Table* in Chapter 3, is a powerful Lean method that complements strategy deployment by clearly displaying the connections between an organization’s priorities and tactical Lean implementation efforts on a single piece of paper. (A3 refers to the paper size, approximately 11 by 17 inches.) The visual presentation of this highly interactive strategy deployment planning process using the A3 method incorporates key performance measures and assigns specific responsibilities for achieving the goals to individuals at all levels of the organization. This creates a powerful means for connecting Lean initiatives with an organization’s mission and strategy. The end result is a living, dynamic strategic planning process that is intrinsically linked to the activities and improvement efforts that are planned and executed in the organization.

Concluding Thoughts

While the Lean journey takes hard work and perseverance, the results can be transformative—freeing employees to focus more time on value-added mission-critical work dramatically improves performance outcomes, customer and stakeholder satisfaction, and employee morale. With Lean, everyone wins: the Lean journey can lead to satisfied constituents, empowered and engaged employees, passionate leaders, and better environmental quality. Best wishes for a productive and successful Lean effort.

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Templates and Tools

See the following links for templates and tools related to Lean methods. Additional tools are available in EPA's [Lean Government Methods Guide](#). All links were accessed in October 2016.

Rapid improvement event (kaizen event) and continuous improvement facilitator resources:
Minnesota Continuous Improvement Training Materials, Facilitator Toolkit, and Organizational Resources: <https://mn.gov/admin/continuous-improvement/resources/projects/toolbox/>
Iowa Lean Event Resources: <http://lean.iowa.gov/resources/index.html>

Plan Do Check Act Project Resources (also called "A3" planning process):
Washington State gPDCA process: <http://des.wa.gov/services/HRPayroll/Lean/gpdca>
Washington State Nine-Step Improvement Story template:
http://www.results.wa.gov/sites/default/files/Improvement_Story_Worksheet_Template.docx

Point Kaizen Tips: www.gembapantarei.com/2006/12/when_is_point_kaizen_ok.html

Process Walk Checklist Example:
www.bluehangar.com/uploads/5/3/2/3/532364/bh_process_walk_checklist.pdf

Visual Controls tips: <http://theleanthinker.com/2007/08/20/sticky-visual-controls/>

Websites

U.S. Environmental Protection Agency, Lean website, www.epa.gov/lean (contains numerous Lean government publications, resources, and case studies)

Lean Enterprise Institute, www.lean.org (a non-profit organization dedicated to advancing Lean; website includes a discussion forum on Lean government)

Lean Government Center, www.leangovcenter.com (maintains a list of Lean government websites)

State and Local Lean government websites (partial list):

- Colorado Local Public Health and Environmental Resources Quality Improvement Resources webpage: <https://www.colorado.gov/pacific/cdphe-lpha/tools-and-resources>
- Colorado Lean and Performance Improvement Tools: <https://sites.google.com/a/state.co.us/colorado-performance-management/performance-planning-and-lean>
- Lean Connecticut website: http://www.ct.gov/opm/cwp/view.asp?a=4595&q=538306&opmNav_GID=2162
- Connecticut Department of Energy & Environmental Protection Lean website: http://www.ct.gov/deep/cwp/view.asp?a=2699&Q=455414&deepNav_GID=1511%20
- Iowa Office of Lean Enterprise website: <http://lean.iowa.gov>
- King County, Washington website: <http://www.kingcounty.gov/depts/executive/performance-strategy-budget/lean.aspx>
- Maryland World Class Consortia and Lean Government website: <http://mwcmc.org/leangovernment>
- Michigan Lean Consortium (public and private) website: <http://michiganlean.org/>
- Minnesota Continuous Improvement website: <http://mn.gov/admin/lean/>
- New Hampshire Lean website: <http://lean.nh.gov/> (Case studies at: <http://lean.nh.gov/ProjectCaseStudies.aspx>)
- Lean Ohio: <http://lean.ohio.gov/>
- Rhode Island Office of Management and Budget Strategic Planning/Lean Resources webpage: <http://www.omb.ri.gov/strategic/#section1>
- Washington State Lean website: <http://www.results.wa.gov/what-we-do/apply-lean>
- Washington State Department of Ecology Lean website (government and manufacturing): <http://www.ecy.wa.gov/about/lean/>
- Wisconsin State Lean website: <http://walker.wi.gov/wisconsin-priority/reforming-government/Lean-Government>

- Wisconsin Department of Natural Resources Lean website:
<http://dnr.wi.gov/about/lean.html>

Weblogs that discuss Lean government topics:

- Curious Cat Management Improvement: <http://management.curiouscatblog.net>
- Evolving Excellence: www.evolvingexcellence.com/blog
- Gemba Panta Rei: www.gembapantarei.com/lean_government
- iSixSigma: www.isixsigma.com
- Mark Graban's Lean blog, <http://www.leanblog.org/>

APPENDIX B. RESOURCES

This appendix includes practical tools and resources for learning about Lean, conducting successful Lean process improvement events, and becoming a Lean enterprise. A summary description of each resource appears below. The resources are organized according to the chapter in which the Starter Kit references them, with a separate list of the resources that are only available on-line. *All of the resources are available for download from EPA's Lean Government website, www.epa.gov/lean.*

List of Starter Kit Resources

Web-Only Resources

The following resources are not included in the Appendix to the Starter Kit, but are available for download online.

- [*Lean and Information Technology Toolkit*](#)
- [*Lean Leadership Guide*](#)
- [*Lean Government Event Scoping Guide*](#)
- [*Lean Government Methods Guide*](#)
- [*Lean Government Metrics Guide*](#)
- [*Lean Replication Primer*](#)
- [*EPA Continuous Process Improvement Training Strategy*](#)
- Lean Implementation Guide
- Lean Project Poster Template
- SIPOC Template
- SIPOC Instructions

Chapter 2: Tools and Resources for Understanding Lean and the Continual Improvement System

- Frequently Asked Questions about Lean

Chapter 3: Tools and Resources for Selecting a Lean Project

- Pre-Screening Application for Lean Projects
- Lean Facilitator Request for Proposal

Chapter 4: Tools and Resources for Lean Project Scoping and Preparation

- Lean Project Sponsor Contract
- Lean Project Supplies List

- Rapid Improvement Event Logistics Checklist
- Scoping Meeting Agenda
- Lean Team Charter
- Rapid Improvement Event Preparation Checklist
- Lean Metrics Checklist
- Pre-event Data Collection Guide
- Rapid Improvement Event Agenda
- Frequently Asked Questions about Lean (also referenced in Chapter 2)

Chapter 5: Tools and Resources for Conducting a Lean Project

- Team Leader Daily Agenda
- Lean Project Homework
- Lean Project Report-Out Presentation Template
- Lean Project Implementation Plan Template (also referenced in Chapter 6)
- Lean Project Implementation Plan Example (also referenced in Chapter 6)
- Report-out Summary
- Event Evaluation Form
- Lean Event Certificate Template

Chapter 6: Tools and Resources for Lean Event Follow-Up

- Lean Project Implementation Plan Template
- Lean Project Implementation Plan Example

Chapter 7: Tools and Resources for Diffusing Lean Activity and Becoming a Lean Enterprise

- Agency Lean Coordinator Job Description
- Agency-Wide Lean Tracking Sheet

Descriptions of Starter Kit Resources

Web-Only Resources

The following resources are not included in the Appendix to the Starter Kit, but are available for download online.

1. **Lean and Information Technology Toolkit.** This toolkit provides how-to guidance, resources, and tips for combining Lean and IT to improve existing IT processes and more cost-effectively design new IT products and services using Lean Startup, Agile, and other Lean methods.

2. **Lean Leadership Guide.** This guide describes eight critical steps that Lean leaders should take in order to ensure the success of process improvement efforts.
3. **Lean Government Project Scoping Guide.** This guide is designed to help government agencies select, scope, and charter successful Lean projects. It includes examples from environmental agency Lean projects.
4. **Lean Government Methods Guide.** This guide describes the array of Lean methods applicable to government agencies and when to consider using each method.
5. **Lean Government Metrics Guide.** This guide provides definitions and examples of metrics often used in Lean government efforts.
6. **Lean Replication Primer.** This Lean primer describes how EPA offices and regions can share and transfer Lean project successes elsewhere to generate further improvements.
7. **EPA Continuous Process Improvement Training Strategy.** This framework outlines a body of knowledge (education/content), a body of experience (application of tools and demonstrating results), and continuous learning (coaching, mentoring and specialized courses) for Lean and continuous process improvement practitioners who wish to apply their skills at EPA.
8. **Lean Implementation Guide.** This guide contains guidance, tips, and resources to help agencies successfully manage follow-up and implementation to sustain process improvement efforts.
9. **SIPOC Template.** This spreadsheet provides a fill-in worksheet that your team can use to scope the Lean project using a SIPOC exercise.
10. **SIPOC Instructions.** This guide provides directions for your team to use when filling in the SIPOC template in order to scope a Lean project.

Chapter 2: Tools and Resources for Understanding Lean and the Continual Improvement System

1. **Frequently Asked Questions about Lean.** This sample Question and Answer document answers many of the key questions that get raised about Lean projects. The document can be distributed to agency staff prior to an project.

Chapter 3: Tools and Resources for Selecting a Lean Project

1. **Pre-Screening Application for Lean Projects.** Once an agency has conducted its first Lean project, it is helpful to have a standard form for evaluating and prioritizing potential future projects. This application outlines questions for agency managers and staff to answer about potential value stream mapping projects.
2. **Lean Facilitator Request for Proposal.** This sample request for proposal describes potential qualifications to look for in a Lean facilitator and how to rank candidates.

Chapter 4: Tools and Resources for Lean Project Scoping and Preparation

1. **Lean Project Sponsor Contract.** This contract is signed by the team sponsor and team leader to ensure the sponsor understands the project's focus and the critical role that the sponsor plays.
2. **Lean Project Supplies List.** This supplies list includes materials frequently used at Lean projects. To help ensure smooth project functioning, come prepared with the right supplies on hand.
3. **Rapid Improvement Event Logistics Checklist.** This checklist provides a chronological guide for making food and logistical arrangements for a Lean event. While food and logistics preparation may seem like minor issues, they ensure that an event functions smoothly and allow participants to focus on the process.
4. **Scoping Meeting Agenda.** This agenda includes a set of objectives and guiding questions to discuss with the project team during the scoping meeting.
5. **Lean Team Charter.** This charter allows an agency to articulate the scope, goals, and objectives of the project, along with follow-up dates to ensure the process will move forward afterwards.
6. **Lean Metrics Checklist.** This checklist outlines when to use Lean performance metrics in Lean projects, including setting objectives, collecting data, tracking progress, and reporting results.
7. **Rapid Improvement Event Preparation Checklist.** This preparation checklist provides a summary of key actions needed across the phases of Lean rapid improvement event planning and implementation.
8. **Pre-project Data Collection Guide.** This guide outlines critical steps and questions associated with gathering baseline or "current state" data before a Lean project.
9. **Rapid Improvement Event Agenda.** This rapid improvement event agenda provides an example of time allocation over a five-day event. The agenda is a high-level guide and can be easily modified to be more event-specific.
10. **Frequently Asked Questions about Lean.** (See description listed under Chapter 2.)

Chapter 5: Tools and Resources for Conducting a Lean Project

1. **Team Leader Daily Agenda.** This detailed agenda outlines specific roles and responsibilities of a team leader over a five-day Lean event.
2. **Lean Project Homework.** This homework sheet is a useful way to track action items and assignments identified during a Lean project.
3. **Lean Project Report-Out Presentation Template.** This template provides standard slides to share relevant information from Lean projects at the project report-out and beyond.
4. **Lean Project Implementation Plan Template.** This template creates a structure for the project team to outline action items in a Lean project, assign a person responsible for completing each item (the "Owner"), set deadlines, and track progress toward full implementation.
5. **Lean Project Implementation Plan Example.** This is an example completed implementation plan.

6. **Report-Out Summary.** The project report-out summary is a one-page “snapshot” of the project results. The summary includes the project scope, objectives, goals, a tabular representation of improvements, and a list of actions implemented.
7. **Project Evaluation Form.** This form is used to evaluate and solicit feedback from project participants. It is important to listen to participants’ perspectives since their responses can inform the success of future projects.
8. **Lean Project Certificate Template.** Print out this certificate of participation and fill in each Lean team member’s name, the process improved, and the date, and award to everyone involved. The certificates help to spread awareness of Lean when displayed in team members’ offices.

Chapter 6: Tools and Resources for Lean Project Follow-Up

1. **Lean Project Implementation Plan Template.** (See description in Chapter 5.)
2. **Lean Project Implementation Plan Example.** (See description in Chapter 5.)

Chapter 7: Tools and Resources for Diffusing Lean Activity and Becoming a Lean Enterprise

1. **Agency Lean Coordinator Job Description.** This job description outlines the roles and responsibilities of an agency Lean coordinator; it can be used by agencies interested in expanding their Lean efforts.
2. **Agency-Wide Lean Tracking Sheet.** This spreadsheet can be used to track the process improvement efforts throughout an organization, including next steps and the status of implementation and follow-up.

Frequently Asked Questions about Lean

1. **Are we compromising environmental protection?**
This is not about loosening environmental regulations or our agency's commitment to environmental protection. We are looking for efficiencies in workflow, paper processing, number of steps in our process, etc. In fact, our goals are to enhance our ability to protect the environment by being able shift more time and resources on environmental protection activities.
2. **Will anyone lose his or her job by making this process so efficient?**
Our people are very important and will continue to be part of this agency. Some people's job duties may change and some may have different office locations or configurations. But all staff will remain part of this agency.
3. **Municipalities, consulting engineers, and other external entities slow down the permitting process. How are they involved, and who will make them more efficient?**
Outside stakeholders will take part in the project to help identify opportunities and concerns. However, this is not about how other organizations conduct processes, which we cannot control. Rather, we are focusing on what we can control, and that is how we move a permit through the approval process.
4. **What guarantees do we have that this will actually help the process?**
Lean is a proven methodology used to break through barriers and cut through bureaucracy, helping teams reach their goals.
5. **Why are we doing this on [Project Name]? Why not another issue?**
First, [Project Name] meets the three criteria for undertaking a Lean project: it should be a large-volume process; it should use the same steps every time; and it should be a core business activity. Second, we see this issue as an integral step to improving the [water quality in the State].
6. **Have we messed up? Have we done something wrong?**
The [Agency] is proud of the professionalism and performance of this staff. Conducting a Lean project is a way to enhance that performance. The goal is to give people the tools to do their jobs better. Each of us, in our own work areas, could benefit from that type of assistance.
7. **Is this a test of my job performance? Will I get in trouble for not doing well in my job?**
These projects are performed under the assumption that everyone involved is already doing their best—but that with some assistance, efforts can be altered to lessen steps, delays, and time, with no loss of performance or quality. Improvements will focus on reducing the time that no one is working on a project. The time it sits in someone's in-box or is waiting for a reply is waste that can be reduced.
8. **How can you expect to get meaningful change in one week?**
Rapid improvement events are specifically engineered to achieve results in an intense, one-week work session. Additionally, preparation has taken place prior to the actual event.
9. **How can they understand something as complex as [Project Name or Process] in a week?**
The participants will learn the steps in the process, not how to conduct the process. The

process will be laid out in graphical form to make it easier to understand the sequence and how steps are interrelated.

10. **Who is involved and why?**

The team that will be designing the new process is composed of [Team Members], other Agency employees involved in the [Project Name], and some of the people who are impacted by the process or who impact the process. All of these different viewpoints are important in designing a better process.

11. **Even if I'm not directly involved on the team, what will I need to do during that week?**

You may be asked questions by the team members to clarify your part in the process. Please take the time to answer their questions completely. Team members may also ask to observe and time you while you complete a step in the process or discuss the time necessary to complete a step.

12. **Will people be in my office? Will they observe us talking about confidential issues, sensitive operations, controversial issues, sensitive policy issue debates, and phone calls that all occur each week?**

The team is not interested in specific projects, but how the process works in general.

13. **What happens if I have to leave during the week?**

If you are a member of the team, please coordinate your absence with the team leader, [team leader name]. If you are not on the team, you only need to coordinate your absence with your supervisor, as usual.

14. **Will the recommendations be rigid or able to change in the future if they fail or cause unintended consequences?**

The team will not be making recommendation—they will design an improved process that will be implemented immediately. The new process will be tested during the project, but if adjustments need to be made later, they will be made.

15. **How is this process to be judged a success or failure?**

Data are being gathered on how well the process performs before the project and data will be collected after the project for comparison.

Pre-Screening for Application for Lean Projects

1. Identify the area of study:
2. Is the anticipated scope manageable?
3. What are the current problems with the value stream for this area of study (from the organization's perspective and from the customer's perspective)?
4. What is the extent of variation in the area of study?
5. What data is currently collected to measure activities in/about the area of study?
6. Who touches the value stream or process?
7. What is in and out of scope for the project?
8. Who is directing the process?
9. What do your customers want that you are currently not able to supply?
10. Is there senior executive leadership support for this area of study?
11. Is there sufficient funding available to support the project ?
12. What is the anticipated schedule for the project?

Lean Facilitator Request for Proposal

Please describe in detail how you will meet each requirement. The successful Vendor will work the [insert Agency name] (the Agency) to facilitate the expansion of lean process improvement methodology in executive branch agencies. Such services shall include, but are not limited to, the following:

- A. Lead department rapid improvement events, Design for Lean Six Sigma projects, value stream mapping events, conduct 5S training and audits, and consult with the Agency on other relevant Lean tools and methodologies. While serving as the lead consultant, the service provider will also coach and mentor state employees, serving in the capacity of team lead, to build the Agency's capacity to successfully lead Lean projects.
- B. Meet with Agency leadership to identify potential Lean projects. Conduct pre-work projects that result in the identification of project scope, objectives, goals and data compilation. The consultant will also guide the Agency in team member selection for participation in Lean projects.
- C. Provide follow-up services, on an as needed basis, to ensure sustainability of Lean process improvement efforts.
- D. Work with department leadership to implement policy deployment so that Agency improvement efforts are linked to strategic goals.

If a Vendor's proposal does not meet the required services, the proposal will be rejected.

1.1. QUALIFICATIONS AND INFORMATION

Vendors should offer detailed answers to the questions in this section.

- A. Please describe your experience facilitating and consulting on Lean in a public sector organization that resulted in measureable improvements.
- B. Please describe the methodology used to implement Lean in an organization. Please outline basic methodology as well as tools.
- C. Please describe in detail any additional services that you believe would assist the Agency in this project. The benefit that is provided to the Agency should be specifically addressed.

1.2. VENDOR INFORMATION

The following information is required of prospective Vendors and will be used to evaluate their qualifications:

- A. Name of Vendor
- B. Form of business entity (e.g. corporation, partnership, etc.).

- C. State of incorporation (if a corporation).
- D. Home office address and telephone number.
- E. List of branch locations.
- F. Provide a description of your background, organizational history, size and years in business.
- G. Specialized services, if any, and years of experience in each such area.
- H. Minimum of three (3) business references from companies or government agencies that use services within the scope of this RFP.

1.3. SELECTION PROCESS

A. Evaluation criteria and assigned point values:

- | | |
|--|-----------|
| • Credentials and Qualifications | 35 points |
| ○ Demonstration of vendor's qualifications and expertise | |
| ○ Number of years of experience in providing service sought by RFP | |
| ○ Level of experience providing types of services sought in RFP in a public sector organization | |
| ○ List of services similar to those sought by RFP that vendor has provided to other organizations. | |
| • Proposal Meets Mandatory Requirements | 35 points |
| • References | 10 points |
| • Completeness and Organization of Bid | 10 points |
| • Costs | 10 points |

Total 100 points

The cost will be used in the cost formula below to compute the relative number of cost points awarded to each proposal. The lowest cost will receive the maximum number of cost points.

$$\frac{\text{Lowest Cost}}{\text{Vendor Cost}} \times \text{Available Points} = \text{Points}$$

Lean Project Sponsor Contract

The purpose of this contract is to help you and your team achieve successful and measureable project outcomes. Critical behaviors to help ensure your team's success include:

- **Passionate**—Enthusiastic support of the team to ensure team success.
- **Strategic**—Using the project activity to advance a business objective by improving the performance of the targeted process while being aware of the impact to the total system.
- **Committed**—Engaged from planning the project through sustainment of implemented process changes.
- **Risk Taking**—Encourage creative thinking to drive paradigm-breaking results.
- **Open Minded**—Influence the team to develop the best solution without introducing pre-conceived ideas.

It is the responsibility of the team sponsor to ensure clarity regarding the coverage of project expenses including team members coming in from other locations. It is suggested that the project sponsor review with the team leader, as well as with parties who may be covering the project expenses, early in the planning stages of the project activity.

I have read and support the position paper for this project and understand the critical role that I play within the project process. As a team sponsor, I will follow the project-preparation checklist to ensure my role to support the overall success of the team.

Project Sponsor Signature: _____

Team Leader Signature: _____

Date: _____

Team leader is to retain the signed contract along with all other project documentation.

Rapid Improvement Event Supplies List

Note: Supplies quantities are for an event with approximately 18 people.

DESCRIPTION	QTY	ESTIMATED LIST PRICE	ESTIMATED TOTAL COST
Perforated Note Pads (White)	2	\$12.73 DZ	\$25.46
Butcher Paper Roll 36" W X 150' L	1	\$13.04 RL	\$13.04
Self Stick Easel Pads	2	\$25.26 PK	\$46.52
Sticky Notes (pastel color) 3"X5"	3	\$5.05 PK	\$15.15
Sticky Notes (florescent color) 3"X5"	1	\$5.91 PK	\$5.91
Ballpoint pens (Black or Blue)	20	\$.60 EA	\$12.00
Permanent Markers (Black)	6	\$.75 EA	\$4.50
Flip Chart Markers (4 colors)	4	\$1.95 ST	\$7.80
Removable Glue Stick	4	\$.84 EA	\$3.36
Masking Tape 1" X 60 yards	2	\$5.71 RL	\$11.42
Scissors	8	\$1.45 EA	\$11.60
Hang Name Badges 50 per box	1	\$10.95 BX	\$10.95
Easels for easel pads	4	\$14.12 EA	\$56.48
GRAND TOTAL			\$228.40

Supplies to bring that do not require additional purchase:

- Laptop with training briefings and sample results (an extension cord if needed)
- Seven wastes checklist and ground rules
- Digital camera (be sure to get permission from site, and include process map photos, team photos, and all whiteboards)

Rapid Improvement Event Logistics Checklist

6 weeks before event

- ☐ Find meeting rooms
 - Monday 1:30 – 4:30 - T-TH 8-5:30 - F 7:30-noon
 - Fridays – Reserve the report-out location
- ☐ Order supplies

2 weeks before event

- ☐ Order meals
- ☐ Make nametags (get list from team leader)
- ☐ Prepare team member folder (agenda, charter, nametags)

1st Day of event

- ☐ Help team leader set up room
- ☐ Make coffee, set up all coffee supply (1 hour before start of project)
- ☐ Set out team member folder
- ☐ End of day disconnect coffee pot

2nd, 3rd, and 4th Day of event

- ☐ Make coffee
- ☐ Bring breakfast into room
- ☐ Fill cooler with pop, juice and water
- ☐ Bring lunch into room
- ☐ Bring snacks into room
- ☐ Order dinner (if necessary)
- ☐ Assist in clean up at the end of the day

5th Day of event

- ☐ Make coffee
- ☐ Bring breakfast into room
- ☐ Set up snack/coffee/drink at the report-out location (if necessary)
- ☐ Assist in clean up at the end of report
- ☐ Collect and store all extra meal supplies

After the event

- ☐ Gather all receipts
- ☐ Fill out Travel Payment to pay vendors
- ☐ Summarize project evaluations

Scoping Meeting Agenda

[Date, Time]

[Location]

- I. Understand critical issues
 - What is the purpose of this project?
 - Why is it taking place?
 - What is the desired outcome?
 - What are the boundaries of the activity?
- II. Understand and discuss high-level process steps
- III. Develop scope statement based upon agreement of boundary conditions
- IV. Define goals and objectives for the project
- V. Identify pre-work for project: what, who to complete, etc.
- VI. Which resources must/can be utilized?

Lean Team Charter

Project Details

Project Name:
Organization:
Project Meeting or Event Dates/Time:
Project Meeting or Event Location/Room:
Project Sponsor(s):
Team Leader(s):
Facilitator(s):

Management Briefings

- *Dates/Time:*
- *Location:*

Final Presentation

- *Date/Time:*
- *Location:*

Project Description

Process Description:

Customers & Deliverables of the Process:

Problem(s) to Address in Project: *[What is the problem the team is trying to address in the project?*

What evidence do you have that the problem exists? How could we deliver more value for the customer?]

Project Scope

[What are the start and end points in the process that the project will address?]

Process Start:

Process End:

Boundary Conditions

[What are the boundaries and limitations of the scope (i.e., what is excluded from the process being addressed)? What types of changes are off limits or out of bounds to the team?]

Goals, Objectives, and Metrics

Goals

[Goals define the desired outcomes for the project – that is, what success looks like.]

Goal 1:

Goal 2:

Objectives and Performance Metrics

[Objectives set specific, measurable targets for improvement. Express your objectives as percent reductions if you do not have current, baseline data for the process.]

Objective 1:

Objective 2:

The following table summarizes the team's performance metrics and targets for the Lean project.

Metrics	Current Performance	Target (Desired Performance or % Change from Current Performance)
EXAMPLE 1: Lead Time	100 business days	25 business days
EXAMPLE 2: Processing Time	TBD at event	↓30%
Lead Time		
Processing Time		
Number of Process Steps		
Percent Complete and Accurate		
Participant Satisfaction with the Process (1-5 scale)		
[Other Metrics]		

Qualitative Outcomes

[Specify any qualitative outcomes for the project, such as clarify roles and responsibilities, create standard work procedures, improve communications, improve customer satisfaction, etc.]

-

Pre-Work

The following actions represent what tasks need to be completed prior to the Lean project. It may also be helpful to identify the person responsible for following up with those performing pre-work tasks.

Action	Owner	Due Date
1. <i>[pre-event task]</i>	<i>[person responsible]</i>	<i>[mm/dd/yy]</i>
2. <i>[pre-event task]</i>	<i>[person responsible]</i>	<i>[mm/dd/yy]</i>
3.		

Follow-Up Schedule

These dates will be confirmed with the team during the project in the context of future needs.

- **30-Day Management Meeting:** [mm/dd/yy]
- **60-Day Management Meeting:** [mm/dd/yy]
- **90-Day Management Meeting:** [mm/dd/yy]
- **Other Key Milestones:**

Team Members

[Ideally 8-10 people. The majority (75-80%) should be people who work in the process; also include 1-2 supervisors, and 1 customer or stakeholder. Note the name and function that each person serves, such as data entry, document production, supervisor, quality control, IT specialist, customer, etc.]

1. [Name, function]
2. [Name, function]
3. [Name, function]
4. [Name, function]
5. [Name, function]
6. [Name, function]
7. [Name, function]
8. [Name, function]

On-Call Support

[Identify any individuals who will be available as needed during the project to answer questions, address issues, or make decisions to enable the team to succeed. Include contact information if appropriate.]

- [Name, function]
- [Name, function]

Approvals

Our signatures show our commitment to this project and our willingness to take actions to ensure its success.

	Project Sponsor	Team Leader	Facilitator
Signature			
Date			

Rapid Improvement Event Preparation Checklist

Planning

- ☐ Scope of event or project
- ☐ High level process steps
- ☐ Data available (time, quantity, frequency)
- ☐ Budget (cost center)
- ☐ Potential internal and external team members
- ☐ Identify support staff (refer to support staff role)
- ☐ Identify communication staff (prints team certificate, communicates with other employees)
- ☐ Identify staff with Microsoft Visio or other process mapping software (installed on laptop)
- ☐ Reserve room for pre-event, event, and report-out presentation
- ☐ Reserve laptop, projector and speakers
- ☐ Send invitation/email to team members about pre-event and event date, time, and location

Scoping Meeting

- ☐ Set up room
- ☐ Set up projector and laptop (for Lean overview)
- ☐ Set up one easel stand and pad, provide easel markers
- ☐ Develop scope, goals, and objectives for event
- ☐ Identify pre-work
- ☐ Finalize team member selection
- ☐ Identify sub-team leader
- ☐ Finalize team members meal selection

Before Event

- ☐ Order meals, snacks and drinks
- ☐ Order supplies (refer to supplies List)
- ☐ Print/order training manuals
- ☐ Prepare folders and nametags (include training manual, agenda, scope, goals, and objective)
- ☐ Invite management to daily report (e.g., Tuesday and Wednesday from 4:00 to 4:30 p.m.)
- ☐ Invite interested parties and employees to report-out (e.g., Friday from 10:00 to 11:00 a.m.)
- ☐ Arrange a site visit for the Lean team to talk with the workers and see the process in action during the event.

Event

- ❑ Set up room and layout folders and nametags
- ❑ Set up projector, laptop and speakers
- ❑ Set up two easel stands and pads, provide easel markers
- ❑ Event supplies available in the room
- ❑ Provide meals, snacks, and drinks
- ❑ Take team picture on Tuesday morning (for team certificate)
- ❑ Setup room with 2–3 computers/laptops on Wednesday and Thursday (connected to network for accessing files if possible)
- ❑ Print and distribute team certificate on Friday
- ❑ Communicate with other staff via website or email on progress of team

After Event

- ❑ Email team member report-out presentation and other relevant files to event participants
- ❑ Fill out travel payment form
- ❑ Send thank-you letters to team members
- ❑ Set up 30-day follow-up date, time, and location
- ❑ Develop communication plan (e.g. update website with event results, inform stakeholder groups)

LEAN METRICS CHECKLIST

Metrics are one of the cornerstone of successful Lean improvement efforts. The Lean Government Metrics Guide will help you understand and select metrics to support project implementation. This checklist will help you apply the concepts you read about in the Metrics Guide. It will help your team to select, gather information for, collect, evaluate, and report on metrics at the appropriate times in implementing Lean projects. This checklist is structured to support a Lean rapid improvement event, but the concepts and sequence of tasks will work in the context of many other types of process improvement methods.

Before a Lean Project / Scoping & Planning Phase

- ☐ Identify **goals and objectives** in your Lean Team Charter. Consider which metrics (and/or any are relevant for your project, such as:
 - Lead time (total time)
 - Processing time (touch time, *excludes* waiting time)
 - Number of process steps
 - Percent Complete and Accurate (a quality measure)
 - Participant satisfaction
 - Other metrics (e.g., customer satisfaction, cost savings, paper reduction, etc.)
- ☐ Collect information on the **current state process “baseline”** for your goals and objectives.
- ☐ Consider collecting **benchmarking data** about your process by learning what other organizations with similar processes have done and what data they gathered.
- ☐ If needed, **revise the goals and objectives** for your project based on the baseline information.

Early in a Lean Project

- ☐ Ask project participants to evaluate their **satisfaction with the current process**, on a 1 to 5 scale, with 1 as “very dissatisfied” and 5 as “very satisfied.” Calculate the average score.
- ☐ After mapping the current state process:
 - Count the total **number of process steps**.
 - Calculate the **lead time** and **processing time** for each step, and sum the times in the process.
 - Determine the **Percent Complete & Accurate (%C&A)**: For each step, ask what percent of the product/work-in-process is complete and accurate when first received. This is the %C&A. Multiply those values together to get the rolling %C&A for the entire process.

Late in a Lean Project – After Mapping the Future State Process

- ☐ Ask project participants to evaluate their **satisfaction with the proposed future process**, on a 1 to 5 scale, with 1 as “very dissatisfied” and 5 as “very satisfied.” Calculate the average score.

- ☐ Estimate the **future state values** for your metrics for the new/proposed process.
- ☐ If desired, calculate how the **labor requirements** for your process have changed with the future state. Lean improvements can often free staff time to work on other activities. (For more information, see the [Lean Government Metrics Guide](#).)
- ☐ Enter your anticipated and/or actual results (current and future state values, % changes) in the **report-out presentation** for the project. See the [Lean Project Report-Out Presentation Template](#) resource in the *Lean in Government Starter Kit*.

After a Lean Project

- ☐ If your organization tracks results across all Lean projects, report your results as directed. Some organizations track initial anticipated results, as well as results after full implementation of the process improvements.
- ☐ While implementing the new process, **continue to monitor and calculate the actual results** you have achieved, relative to your goals and objectives.
- ☐ **Report on your progress** on metrics at your 30-day, 60-day, 90-day, and 6-month follow-up meetings with leadership.
- ☐ **Evaluate your results** against your goals, objectives, and your implementation plan.
 - Do you need to collect additional data to better understand your performance?
 - Are you making the progress you intended? If not, what changes are needed?
 - Have you celebrated your successes?

Pre-event Data Collection Guide

Pre-event Data Collection Steps

1. Initial map of the current process developed by the people who work in the process that is going through the kaizen event.
2. Determine from the map steps that can and cannot be changed, i.e., identify those steps that are mandatory by rule.
3. Outline what items are currently tracked for time.
4. For those items currently tracked for time, determine longest item, quickest item and an average of the items. Do not try to gather data here that you do not already know.
5. Have the staff write down what they do for a week. This includes the projects, as well as meetings, site visits, telephone calls, regular meetings, etc.

The "Voice of the Customer" Data Considerations

Some questions to ask as part of the "voice of the customer" are the following:

1. What do they want?
2. When do they want it?
3. Why do they want it?
4. How do they use the product and how much of it do they use?

These questions will ultimately help in determining the "value-added" steps in the process, as well as provide potential design criteria for the final "product." The best approach would be to ask our customers (select a few), or at least think through these questions from their perspective. If the process has different customer segments, the questions could be asked for each one. As above, this information would be useful for goal setting purposes.

Bench marking would also be helpful in establishing goals for the project. Additionally, it could equip the team with example strategies for achieving the goals for the project.

OTHER POTENTIAL BASELINE METRICS INCLUDE:

- Number of process steps
- Total lead time
- Data on staffing needs
- Data on staff time
- Cycle time
- Data on transaction volume in process (e.g., number of applications)
- Number of handoffs
- Amount of backlog
- Rework percentage (e.g., percent of permits needing rework)

Rapid Improvement Event Agenda

[Date and Location]

Monday: Training Day

- 1:30 P.M. Team member introduction.
- 1:45 P.M. Training.
- 4:30 P.M. Adjourn for the day.

Tuesday: Day of Discovery

- 8:00 AM Work on process mapping, data needs, opportunities for waste elimination, and review ideas against scope and objectives.
- 12:00 P.M. Working lunch.
- 12:30 P.M. Continue with previous work. Create implementation plan.
- 5:00 P.M. Draft Wednesday assignment.
- 5:30 or later Adjourn for the day.

Wednesday: Do Day

- 8:00 A.M. Review Tuesday work. Begin working on selected projects. Sub-teams report progress.
- 12:00 P.M. Working lunch.
- 12:30 P.M. Continue with previous work. Sub-teams report progress.
- 5:00 P.M. Sub-teams report-out. Make Thursday assignments.
- 5:30 or later Adjourn for the day.

Thursday: Do, Re-Do, Document Day

- 8:00 A.M. Review Wednesday work. Continue Wednesday's work. Sub-teams complete specific opportunities for improvement and report-out. Implement new process operation procedures, forms, process map, and baseline data.
- 12:00 A.M. Working lunch.
- 12:30 P.M. Continue with previous work. Document changes and complete the new process. Report out from sub-teams and review all work to ensure everything is complete.
- 5:00 P.M. Prepare for Friday's presentation.
- 5:30 or later Adjourn for the day.

Friday: Day of Celebration

- 7:30 A.M. Finish work on presentation.
- 10:00 A.M. Team presentation.
- 11:00 A.M. Adjourn event. Thank you!

Team Leader Daily Agenda

Day 1

Morning

- ☐ Arrange the room (get someone to help)
- ☐ Get the supplies, easel and easel pad
- ☐ Set up one easel and easel pad
- ☐ Set up the laptop, projector and speakers
- ☐ Set out the folders, training manuals, and nametags

Afternoon

- ☐ Greet everyone when they arrive
- ☐ Start promptly at 1:30 p.m.
- ☐ Welcome everyone and introduce yourself
- ☐ Go through logistics (parking, building access, cell phones, restrooms, meals, etc.)
- ☐ Go through agenda (warn team of potential late nights on Tuesday, Wednesday, and Thursday)
- ☐ Go through ground rules
- ☐ Have everyone introduce themselves
 1. Who are you? Where do you work?
 2. What are your goals this week?
 3. What you like to do when you are not at work?
- ☐ On the easel pad, write “Goals of Team Members” and capture the team member goals
- ☐ Post “Goals of Team Members” on the wall
- ☐ Introduction from senior manager
- ☐ Introduce consultant and/or trainer (begin training)
- ☐ Review the goals and objectives
- ☐ Discuss pre-event data collected
- ☐ Let team know they can leave folder in the room
- ☐ Remind team of start time tomorrow

Evening

- ☐ Disconnect laptop and projector (store in safe location overnight)
- ☐ Tape roll paper on opposite walls (get 1–2 people to help)
- ☐ Spray paper with adhesive glue
- ☐ Setup two easels and easel pad
- ☐ Write on easel pad and post on the wall “Parking Lot/Bike Rack” and “Homework”

- ❑ Lay out scissors, color pad, and markers for flow mapping
- ❑ Tidy up the room (unplug the coffee pot, pick up bottles and cups)

Day 2

Morning

- ❑ Start on time
- ❑ Ask if anyone have question about yesterday's training
- ❑ Start training on flow mapping
- ❑ Ask for volunteer for each flow mapping task
- ❑ Review the goals and objectives
- ❑ Start mapping current state (Identify functions, steps, handoffs)
- ❑ Visit process site for walk through of process.
- ❑ Identify value-added activities and delays on map
- ❑ Estimate lead time (best case, worst case, and average) based on data collected

Afternoon

- ❑ Count the number of steps, delays, value-add
- ❑ Calculate lead time (best case, worst case, and average)
- ❑ Make arrangements for dinner by 3 p.m. if it will be needed
- ❑ Attend 4 p.m. daily report out to management
- ❑ Remind team of start time tomorrow

Evening

- ❑ Setup three easels and easel pad
- ❑ Tidy up the room (unplug the coffee pot, pick up bottles and cups, markers and note pads)

Day 3

Morning

- ❑ Start on time
- ❑ Communication staff takes team pictures
- ❑ Ask if anyone have questions or comments about the current process
- ❑ Give the team 20 minutes to write down what they think the ideal state should be individually
- ❑ Capture the team members ideas on easel pad
- ❑ Break up team into groups (5–6 people per group)
- ❑ Give each group some of the ideas and ask them to apply it to de-selection matrix
- ❑ Ask group to write down on easel pads seven ways of implementing the ideas in the High Impact and Low Difficulty quadrant
- ❑ Have each group report to the team

Afternoon

- ☐ Start to map the ideal/future process
- ☐ Capture Parking Lot/Bike Rack and Homework items on easel pad
- ☐ Identify value-added activities and delays on new process map
- ☐ Estimate lead time (best case, worst case, and average) based on data collected
- ☐ Count the number of steps, delays, value add
- ☐ Calculate lead time (best case, worst case, and average)
- ☐ Make arrangements for dinner by 3 p.m. if it is needed
- ☐ Attend 4 p.m. daily report out to management
- ☐ Remind team of start time tomorrow

Evening

- ☐ Setup three easels and easel pad
- ☐ Tidy up the room (unplug the coffee pot, pick up bottles and cups, markers and note pads)

Day 4

Morning

- ☐ Set up laptop and projector
- ☐ Ask if anyone has concerns or comments about the new process map
- ☐ Review the goals and objectives
- ☐ Review the parking lot and homework items
- ☐ Ask team to volunteer to work on homework items
- ☐ Collect the completed homework items from each group

Afternoon

- ☐ Assign/volunteer team members to homework items that are incomplete
- ☐ Review “Goals of Team Members”
- ☐ Prepare report-out presentation
- ☐ Inform team about flow of report-out presentation (where to stand, introduce next speaker, what to expect, who will answer questions from audience)
- ☐ Assign/volunteer team members to different slides in the presentation
- ☐ Vote on team name
- ☐ Send team name to communication staff
- ☐ Prepare report-out summary
- ☐ Make 50 copies of report-out summary
- ☐ Attend 4 p.m. daily report out to management
- ☐ Remind team of start time tomorrow

Evening

- ☐ Disconnect laptop and projector (store in safe location overnight)
- ☐ Tidy up the room (unplug the coffee pot, pick up bottles and cups, markers and note pads)

Day 5

Morning

- ☐ Set up laptop, projector and speaker
- ☐ Show “Staff Motivation” video
- ☐ Distribute evaluation form to team members
- ☐ Collect filled out evaluations
- ☐ Set up laptop and projector in the auditorium
- ☐ Practice report-out presentation
- ☐ Collect team participation certificate from communication staff
- ☐ Distribute report-out summary to audience
- ☐ Report-out presentation
- ☐ Return supplies to team leader
- ☐ Put the room back in order (get 1–2 people to help)

Afternoon

- ☐ Give completed evaluations to team leader
- ☐ Place all files for project on computer server

Lean Project Homework

As of:

Project #:

Project Name:

Owner:

ITEM	ITEM DESCRIPTION	PERSON RESPONSIBLE	DUE DATE
1	Hold meeting to standardize “front end” documents with other funders/agencies	Gabe	12/17/11
2			
3			
4			
5			
6			
7			
8			

Notes:

Lean Project Implementation Plan Template

Lean Implementation Plan: [Project Title]

Date Created: [mm/dd/yy]

Last Updated: [mm/dd/yy]

Project Sponsor	Team Leader	Facilitator	Project Date

Follow-Up Meeting Schedule	Progress Key
30-Day: [mm/dd/yy] 60-Day: [mm/dd/yy] 90-Day: [mm/dd/yy] 6-Month: [mm/dd/yy] 1-Year: [mm/dd/yy]	TO BE INITIATED (gray) ON TARGET (green) OFF TRACK (red) COMPLETE (purple)

ID #	Action	Owner	Start Date	Target Date	Completed	Jan-yy	Feb-yy	Mar-yy	Apr-yy	May-yy	Jun-yy	Jul-yy	Aug-yy	Sept-yy	Oct-yy	Nov-yy	Dec-yy	Comments
1	[insert action/task]	[insert lead on action and any staff with a supporting role]	[mm/dd/yy]	[mm/dd/yy]	[mm/dd/yy]													[insert notes relevant to the action and status]
2	[insert action/task]	[insert lead on action and any staff with a supporting role]	[mm/dd/yy]	[mm/dd/yy]	[mm/dd/yy]													[insert notes relevant to the action and status]
3	[insert action/task]	[insert lead on action and any staff with a supporting role]	[mm/dd/yy]	[mm/dd/yy]	[mm/dd/yy]													[insert notes relevant to the action and status]

Lean Project Implementation Plan Example

Lean Implementation Plan: IT System Lean Project

Date Created: 6/1/2016 Last Updated: 7/15/2016

Project Sponsor	Team Leader	Facilitator	Project Date
Name	Name	Name	2/21/2016-2/25/2016

Follow-Up Meeting Schedule	Progress Key
30-Day: 3/25/2016 60-Day: 4/25/2016 90-Day: 5/25/2016 6-Month: 8/25/2016 1-Year: 2/25/2017	TO BE INITIATED (gray) ON TARGET (green) OFF TRACK (red) COMPLETE (purple)

#	Action	Owner	Start Date	Target Date	Completed	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sept-16	Oct-16	Nov-16	Dec-16	Jan-17	Comments
1	Develop streamlined application form	J. Doe	3/1/16	6/1/16	TBD												On track to be done by due date
2	Create a standard checklist	J. Smith	3/1/2016	4/1/2016	3/15/16												Completed and under review by management

RESOURCES

3	Collect data on key process indicators	J. Doe	10/1/2016	1/31/17	TBD													To be initiated once new form and checklist are in use
4	Train staff on the new system	J. Doe	3/1/16	4/1/16	TBD													Behind schedule; coordinating with staff to arrange timing

LEAN PROJECT REPORT-OUT PRESENTATION TEMPLATE

About the Template

This resource describes a template for developing a standard Lean Project Report Out presentation. Most Lean events or projects end with a presentation to report on accomplishments and any pending team activities. Each project is unique, so feel free to customize slides as needed to capture the project.

This template includes an appendix of several optional slides that you may choose to include in your presentation. You can move those slides into any point in the presentation if you decide to use them. You may also alter the order of any of the other slides as appropriate.

Overview of Template Slides

SLIDE 0: TITLE SLIDE

- Process and Office name, e.g. “Region 7 SIP Kaizen Project”
- Record the date of the report-out presentation.

Lean Project Report-Out

Process Name
Office Name

[DATE]

SLIDE 1: PROJECT SUMMARY

- Using information from the Team Charter in addition to information from the project, briefly describe what the process is, why it needed to be leaned, and a few high-level bullet points about the benefits and results from the process improvement project.
- As you develop your presentation, you can skip this slide and come back to fill it in after you have completed the rest of the presentation, as it may be easier to write an project summary after you have worked through the rest of the slides.

Project Summary

Briefly explain what the process is and why it needed to be improved

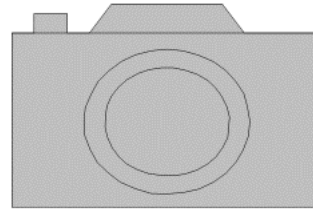
High-level points about key results / benefits of the event (for example):

- Developed standard work for...
- Eliminated ## of unnecessary process steps...
- Clarified roles & responsibilities...
- Designed a new process that will take ___% less time...Etc.

SLIDE 2: TEAM PHOTO

- Insert a photo of the lean project team.
- Note: Could also use the photo on the title slide.

Team Photo



Lean Project Team

Back row (left to right):
Front row (left to right):

2

SLIDE 3: PARTICIPANTS

- List the project or project participants, including their functions in the process (e.g., supervisor, quality control, etc.).
- If appropriate, you can add participants' titles to this slide as well. Consider adding a second slide to allow adequate space to list all members and observers.
- This info is included in the Team Charter.

Participants

Role	Name	Function
Project Sponsor		
Team Leader		
Facilitator		

Role	Name	Function	Name	Function
Team Member				
Team Member				
Team Member				
Team Member				
Team Member				
Observer				

3

SLIDE 4: PROJECT SCOPE AND BOUNDARIES

State the project scope, which is in the Team Charter (if modified during the project/project, include these changes). The scope should include the process start and end points. If the team has decided that anything is specifically out-of-scope or other boundary conditions, mention those here.

- **Example:** This project examined the process from the time the States and Region negotiate and agree on performance criteria and measures to when EPA completes a performance report. Out of scope: Changes to regulations.

Project Scope and Boundaries

- Insert the project scope and boundary conditions from the Team Charter

4

SLIDE 5: GOALS AND OBJECTIVES

- List the quantitative and qualitative goals and objectives of the project. You can draw these from the Team Charter.
- **Lean project goals** are statements of intent that focus team attention on the areas in which improvement results are desired.
- **Lean project objectives** differ from goals in that they are specific and measurable. Objectives should include the goal, metrics associated with the goal, targets, and timeframes.

Examples:

- Goal: Improve participant satisfaction throughout the process
- Objective: Reduce lead time by 50%

Goals and Objectives

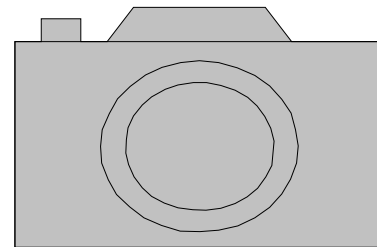
- List the project goals and objectives from the Team Charter

5

SLIDE 6: CURRENT STATE PROCESS MAP

Insert a photo of the current state process that the team developed.

Current State Process Map



Current State Process

6

SLIDE 7: PROCESS CHANGES MADE

List the process changes and improvements that the team accomplished during the project or project. Use multiple slides as needed.

Examples:

- Created a standard work checklist
- Eliminated unnecessary approvals
- Trained staff on the new process to coordinate permit and enforcement reviews
- Developed a spreadsheet to visually track the process status

Process Changes Made

Record the process changes that the team implemented during the event or project:

- Created ...
- Eliminated ...
- Trained ...
- Developed ...
- Etc.

7

SLIDE 8: RECOMMENDATIONS

List any other process changes and improvements the team will undertake after the project. Use multiple slides as needed.

Examples:

- Coordinate with others to share successes and lessons from this project
- Formalize the standard work developed in the project for the new process
- Educate stakeholders about the new process

Recommendations

Record any recommendations for process changes that will continue after the event:

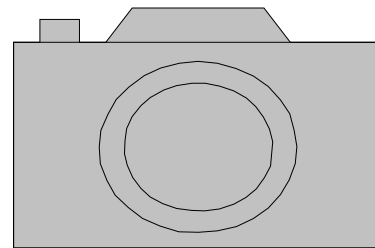
- Coordinate ...
- Formalize ...
- Educate ...
- Etc.

8

SLIDE 9: FUTURE STATE PROCESS MAP

Insert a photo of the future state process that the team developed.

Future State Process Map



Future State Process

9

SLIDE 10: RESULTS

Fill in the current and future state metrics as appropriate for your project. Note the percent change (with up/down arrows, if desired) to show how the future state will be an improvement over the current state.

Example Process Metrics and Definitions:

- **Lead time (business days):** Lead time is the total time from the start of the process to the end point of delivering a service to a customer, *including* wait time. The start and end of the process are defined in the planning stage when you determine your project scope: beginning with the “trigger” that sets the process in motion and ending with the final step in the process.

Results

Process Metric (units)	Current State	Future State	Percent Change
Lead Time (business days)			
Processing Time (hours or days)			
Number of Process Steps			
Percent Complete & Accurate			
Participant Satisfaction with Process (1-5 scale, 5 is “very satisfied”)			

Note: Results reflect anticipated improvements after implementation is complete.

10

- *Example: For a permitting process, lead time would be the time between when a permit application is submitted and when a customer receives a permit (e.g., 50 business days).*
- **Processing time (hours or days):** This metric measures the time to complete the process, excluding wait time. Processing Time, like Lead Time, is an effective metric for telling the improvement story for projects focused on reducing time-related waste in their processes.
 - *Example: The number of working hours when permit reviewers actually review the permit application (e.g., 20 hours), excluding the time when it is waiting to be reviewed.*
- **Number of Process Steps:** Every process is comprised of a series of tasks or activities, each considered to be a "step" in the process. Improving a process commonly changes the overall number of process steps. Often, the number of process steps decreases as a result of Lean, but increases are possible if steps are added to improve product quality or reduce variation.
- **Percent Complete and Accurate (%C&A):** Percent of occurrences that work in process (e.g., a permit application) released to the next step does not require a downstream customer to make corrections or request information that should have been provided initially. For each process step, ask what percentage of the product/work-in-process is complete and accurate the first time it is received. This is the %C&A. Multiply those values together to get the rolling %C&A for the entire process. For more information, see the Lean Metrics Guide: <https://www.epa.gov/lean/lean-government-metrics-guide>
- **Participant Satisfaction:** Participants choose from the options "1, 2, 3, 4, 5" with 1 defined as "Very dissatisfied" and 5 defined as "Very satisfied" as they respond the following questions:
 - Beginning of project: "How satisfied are you with the current process?"
 - End of project: "How satisfied are you with the proposed new process?"
 - Average the ratings across all participants in the project to achieve the current state and future state values.
- You may also wish to report on other results, depending on your goals and objectives for the project.

SLIDE 11: IMPLEMENTATION PLAN: NEXT STEPS

Describe the steps that the team will take to implement the process. Include the name of the person who will be responsible for leading each implementation item. If you cannot fit the full implementation plan on the slide, you could select key actions to provide an example of how the changes will be implemented, or present the actions that will be implemented first.

- **See the Lean Project Implementation Plan Template** for more details on how to show the status of each action.

As part of your implementation plan, be sure to clarify follow-up roles. Who will lead and manage the overall follow-up and implementation effort? What roles will each person serve in the follow-up effort, and who will be responsible for which tasks? It will be critical to actively manage the follow-through

Implementation Plan: Next Steps

ID #	Action	Owner	Timeline											
			Jan-YY	Feb-YY	Mar-YY	Apr-YY	May-YY	Jun-YY	Jul-YY	Aug-YY	Sept-YY	Oct-YY	Nov-YY	Dec-YY
1	[Example action item]	[John Doe]												
2	[Example action item]	[John Doe]												
3	[Example action item]	[John Doe]												
4	[Example action item]	[John Doe]												
5														
6														
7														

11

after the Lean event. The implementation plan helps you clarify these roles and set a timeline for completion.

Action Item Examples:

- Modify the IT Tracking System for use in property inventory
- Purchase new equipment
- Create a checklist of tasks to complete the annual property inventory
- Communicate with colleagues in EPA and state offices about the new process
- Conduct a briefing for staff not at the Lean event on the new process

SLIDE 12: BENEFITS OF THE FUTURE STATE

Examples:

- Improved communication between offices
- Faster time to approve permit applications
- Reduced frustration from everyone involved in the process

Benefits of the Future State

- List the ways that the new process will be an improvement over the current state.

12

SLIDE 13: LESSONS LEARNED

Describe lessons learned about the lean process.

Examples:

- Project pre-work is key to the success of the project
- The size of the scope is important, because there wasn't enough time to discuss everything during the rapid improvement event
- It makes a big difference when senior managers actively support the project

Lessons Learned

- List the team's lessons learned and reflections about the Lean process.

13

SLIDES 14-17: CLOSE-OUT AND BEGINNING OF OPTIONAL SLIDES

Questions and Discussion

14

Thank You!

15

Appendix: Optional Slides

16

Current State Analysis [Optional]

- Placeholder slide for additional discussion of problems with the current state, metrics for the current state, etc.

17

OPTIONAL SLIDES 18-19: IMPLEMENTATION/TRACKING PROGRESS

Optional slides to discuss how follow-up/implementation of the implementation plan will happen. Include dates of follow-up meetings, information about the implementation team leader and what support is needed from managers and senior leadership.

Implementation and Future Plans [Optional]

- Placeholder slide for additional discussion and/or photos of future state implementation planning, such as an impact-difficulty matrix
- Summarize any key challenges that the team anticipates during implementation and ideas for addressing these challenges

18

Tracking Our Progress [Optional]

- Weekly team stand-up meetings
- 30, 60, and 90-day follow-up meetings and presentations to management
- Implementation Manager: [name]
- Keep us accountable for putting the new process in place!

19

OPTIONAL SLIDE 20: PROJECT QUOTES

If appropriate, include quotes and/or project/project feedback from team members.

Examples:

- “The LEAN process provided a rare opportunity for a large team of people, customers and keepers of the process, to take the process apart piece by piece and examine it for redundancy, relevancy and efficiency.”
- “One of the most gratifying parts of the process was that, once the process was laid out and the LEAN team could see the entire process, there was a greater appreciation of the complexity of the process and the fiscal responsibilities that are handled during the day-to-day fees work.”
- “We still have some laborious processes related to fees that this team could not resolve.”

Event Quotes [Optional]

“Example Quote 1.”
-Speaker, Organization

“Example Quote 2.”
-Speaker, Organization

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OPTIONAL SLIDE 21: PARKING LOT

Parking Lot [Optional]

- List any issues that the team did not have time to discuss, but that may be relevant for future efforts.

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Report-out Summary

DATE:

SCOPE:

OBJECTIVE:

GOALS:

RESULTS:

	OLD	NEW	% CHANGE
Steps			1 - (new # / old #)
Value Added Steps			
Decisions			
Loop Back			
Handoffs			
Delays			
Functions in Process			

IMPLEMENTED

[List actions implemented]

Rapid Improvement Event Evaluation Form

Project: _____ Date: _____

Facilitator: _____

Team Leader: _____

You have just completed an event to improve one of your processes. We are interested in your opinion on how things went during the event. We are continuously trying to improve the effectiveness of the events. Below is a list of questions that will help us improve future projects. Please be open and honest with your ratings and comments. Thank you.

On a scale of 1 to 5 please rate the questions below.

1 – Strongly Disagree **2** – Disagree **3** – Neutral **4** – Agree **5** – Strongly Agree

RATING	QUESTIONS
	I was given at least 2 weeks' notice prior to the event.
	The training on Day 1 was effective and prepared me for the event.
	The consultant was effective teaching and guiding the team through the event.
	The consultant listened to my ideas and suggestions.
	The team leader was effective and helpful through the event.
	When my ideas or suggestions were not used, the reasons were explained to me.
	Management support and direction was adequate.
	The time spent this week was productive.
	I have increased my understanding of the value of continuous improvement.
	The material provided was useful.
	The food and beverages provided were adequate.

What did you find most useful during the event?

What suggestions or comments do you have that could help us improve future events?

Lean Project Certificate Template

Certificate of Accomplishment

This is to certify that

has successfully participated in a Lean project to improve the

_____ process

On the ____ day of _____ in the year ____

Signed, _____

*Process
Improvement
Excellence*

Agency Lean Coordinator Job Description

This position is located in the Director's Office under the immediate supervision of the Deputy Director and functions as a program manager for the Agency's process improvement program. The person in this position is responsible for implementing and managing the department's Lean process improvement program, including the deployment of training and other duties that will enhance organizational efficiency and support a culture of continuous improvement and customer satisfaction.

Lean Deployment and Facilitation: Develop and implement an action plan for the deployment of all aspects of the Agency's Lean process improvement program, including, but not limited to kaizen, 5S, value stream mapping, and Design for Lean Six Sigma projects. Responsible for working with department managers in identifying areas for process improvement projects, establishing objectives for each project, and selecting cross-functional team members and leaders. Act in the capacity of the facilitator for each project. Coordinate each project phase and ensure that participants and stakeholders have the tools and resources they need, necessary information, and guidance to enable them to fully engage in the process and maximize the potential outcome of each project.

Tracking Progress: Develop and implement an action plan for tracking, analyzing and reporting return on investment of programs that have undergone process improvement initiatives. Monitor the progress of projects, including ongoing status reviews. Ensure that the database is current relative to process improvement activities. Responsible for coordinating and participating in 30-day, 60-day, 90-day, 6-month, and 1-year follow-up meetings for each project to ensure follow-up activities are completed and improvements are realized and maintained. Develop a comprehensive report which delineates the status and outcomes of each project, including, but not limited to, efficiencies gained, increased customer satisfaction and/or reduced costs or savings realized. Conduct formal reviews with the management team on a quarterly basis to review accomplishments, identify areas for improvement, and respond to questions.

Training: Coordinate the training of Agency staff on Lean process improvement techniques, including a plan for deployment of training to all Agency staff. Ensure that tools, resources, and instructional materials are developed, updated as necessary, and maintained to meet ongoing needs. Responsible for tracking participation and associated costs of time and materials for training deployment. Establish a library of learning materials, both electronic and paper, which can be made available to interested staff. Conduct research focused on benchmarking world-class business process performance at other agencies and utilize findings to assist supervisors in establishing tangible measures of time, cost, and quality.

Communications: Develop and implement an effective strategy for communicating the status and results of the Agency's improvement efforts to partners, customers, and staff. This includes, but is not limited to, the development of an Internet presence to showcase departmental activities. Keep staff informed of revised procedures and methods and related work changes as implemented.

Agency-Wide Lean Tracking Sheet

PROCESS/PROJECT	METHOD*	TEAM LEADER	START DATE	EXPECTED END DATE	COMMENTS (E.G., NEXT STEPS, DATE OF MOST RECENT UPDATE)

*Methods could include 5S, Process Walk, Rapid Improvement Event, or others

