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Lean in Air Permitting Guide

A Supplement to the Lean in Government Starter Kit

Acknowledgments

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- Delaware Department of Natural Resources and Environmental Control (http://www.dnrec.delaware.gov)
- Illinois Environmental Protection Agency (http://www.epa.state.il.us/)
- Iowa Department of Management and Department of Natural Resources (http://lean.iowa.gov/ www.iowadnr.com/)
- 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)

Lean in Air Permitting

Streamlining and improving air permitting processes is a high priority for many environmental agencies. Permitting authorities have carefully sought to address business concerns over permit timeframes and predictability, while providing equal or greater environmental protection and ensuring permit quality. The *Lean in Air Permitting Guide* focuses on an exciting approach which has been successful at improving key dimensions of the air permitting process. Since 2003 public environmental agencies have dramatically improved agency permitting and administrative processes using Lean and Six Sigma process improvement methods. Within a few months of implementation, agencies have achieved impressive results, including:

- Significant decreases in air permit development timeframes
- Decreases to or elimination of permit backlogs
- Improved completeness and quality of air permit applications
- Improved relationships with other regulators, the regulated community, and the public
- Elimination of non-value added activities, allowing permit engineers to devote more value-added time on permit development
- Improved coordination and consistency in permitting approaches within a permitting authority

This was accomplished while ensuring equal or greater environmental protection and increasing value-added activities and time. Furthermore, agencies report improved staff morale and increased permitting process transparency among stakeholders as a result of their Lean initiatives. The success stories from environmental agencies that have used Lean speak for themselves:

- ***Iowa Department of Natural Resources*** reduced the average time to issue standard air quality construction permits from 62 days to 6 days and eliminated 70 percent of the permitting process steps, moving from 23 to 7 steps.
- ***Nebraska Department of Environmental Quality*** decreased their air construction permit backlog by 55 percent and experienced a 50 percent reduction in the permit review timeframe.

Lean techniques identify and eliminate unnecessary and non-valued added process steps and activities that have built up over time. Lean efforts are not just about fixing broken processes. State agencies have found that these methods enable them to understand how their processes are working on the ground and to make adjustments that optimize desired outcomes. 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. Successful Lean implementation also equips permitting authorities to move toward a culture of continuous improvement, enabling on-going program performance improvement. While successfully implementing Lean requires hard work and commitment, the results can be impressive.

The *Lean in Air Permitting Guide* is an important resource for any environmental agency interested in improving their air permitting processes. The guide provides numerous specific examples of the types of changes that several state environmental agencies have made as part of their efforts to streamline and improve air permitting using Lean. Please note that much of the value of implementing Lean lies in the ability of Lean methods—such as value stream mapping and kaizen—to provide a clear map of the current and desired future permitting process and to foster rapid implementation of changes in a coordinated manner. Merely implementing the specific solutions listed in this guide is unlikely to yield the compelling results that environmental agencies have achieved through making these changes in conjunction with the Lean methods. Improvements identified in a Lean event must fit the particular circumstances and processes specific to state air permit programs and the needs of their customers.

This *Lean in Air Permitting Guide* will help you better understand the potential value and results that can be achieved by applying Lean improvement methods to air permitting processes. For more information on the application of Lean to environmental agency processes, visit EPA's Administrative Lean website at http://www.epa.gov/lean/admin.htm and ECOS' Lean Government Website at http://www.ecos.org/section/projects/?id=2292.

LEAN IN AIR PERMITTING GUIDE

A Supplement to the Lean in Government Starter Kit

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Introduction

A number of state environmental agencies have achieved significant gains from air permitting Lean events. Lean is a process improvement approach and set of methods that seek to eliminate non-valued added activities or waste. This *Lean and Air Permitting Guide* highlights those achievements and assists state agencies in planning and implementing successful air permitting Lean events. This guide also builds on and complements the information presented in two administrative Lean products developed by EPA and the Environmental Council of States (ECOS):

- *Working Smart for Environmental Protection: Improving State Agency Processes with Lean and Six Sigma*, which introduces the use of Lean methods for state agency processes and describes the benefits gained by state agencies that have held Lean events.
- *Lean in Government Starter Kit: A Practical Guide to Implementing Successful Lean Initiatives at Environmental Agencies*, which provides detailed information and tools for planning and implementing a Lean event.

This guide should be used in conjunction with the *Lean in Government Starter Kit (Starter Kit)*, which presents step-by-step instructions for implementing a Lean event.

This *Lean in Air Permitting Guide* was developed based on air permitting Lean events held at the Delaware Department of Natural Resources and Environmental Control, Idaho Department of Environmental Quality, Illinois Environmental Protection Agency, Indiana Department of Environmental Management, Iowa Department of Natural Resources, Michigan Department of Environmental Quality, Minnesota Pollution Control Agency, Nebraska Department of Environmental Quality, and Virginia Department of Environmental Quality. The ideas and best practices in this document were primarily drawn from the written outputs and presentations developed by these agencies after completion of their Lean events. Representatives from six of the agencies listed above, as well as EPA staff, reviewed this guide to provide additional depth and insights into the characterization of air permitting Lean events.

Overview of Lean Air Permitting Successes

This *Lean in Air Permitting Guide* focuses specifically on Lean events conducted on air permitting processes. Air permitting processes tend to be top candidates for state environmental agency Lean events because they are areas in which agencies often experience "pain," in the form of backlogs, permit approval time, staff turnover, and customer complaints. This guide provides those interested in conducting a Lean air permitting event with an idea of what occurs during an event and examples of typical inefficiencies and improvements addressed during Lean air permitting events.

Applying Lean methods to air permitting processes has created tremendous benefits for state agencies and significant improvements in those agencies' air permitting programs. Agencies that have held Lean events report a variety of improvements to their air permitting processes, including:

- Decreases to or elimination of permit backlogs
- Significantly decreased air permit development timeframes
- Fewer or shorter instances when the permit development clock[*] is stopped
- Improved relationships with other regulators, the regulated community, and the public
- Improved quality of air permit applications
- Fewer distractions for permit engineers, allowing more time to be spent on permit development
- Improved coordination between permit engineers and air permit program managers

The table below quantifies several of these success stories.

Example Air Permitting Lean Event Successes

Delaware Department of Natural Resources and Environmental Control reduced their natural minor source air permit backlog from 199 to 59 permits in three months and to 25 permits in one year. They also reduced rework by 45 percent and decreased the timeframe in which minor source air permits are issued.[†]

Idaho Department of Environmental Quality reduced the number of hand-offs in their air construction permitting process from 71 to 2 and decreased the permitting cycle time from 325 hours to 116 hours.

[*] In this guide, the term "permit development clock" is used to describe the "value-added" time when the air permit is under active development (being worked on). "Stopping the permit development clock" refers to those periods when the permit development is put on hold (e.g., when a permit engineer is waiting for additional information from an applicant).

[†] Please note that the DNREC backlog included permits waiting to be issued and permit applications that had been abandoned or withdrawn by applicants.

Iowa Department of Natural Resources reduced the average time to issue standard air quality construction permits from 62 days to 6 days and eliminated 70 percent of the permitting process steps, moving from 23 to 7 steps.

Nebraska Department of Environmental Quality decreased their air construction permit backlog by 55 percent and experienced a 50 percent reduction in the permit review timeframe.

Overall, one of the key accomplishments of air permitting Lean events has been to decrease the length of time it takes to process and issue a permit or permit modification, as summarized in the table below.

Example Improvements in Permitting Timeframes Resulting from Lean Events

State Agency	Permitting Process	Permitting Timeframe Before Lean Event (in days)	Permitting Timeframe After Lean Event (in days)	Total Decrease (in days)
Idaho Department of Environmental Quality	Permit to construct	270	97	173
Indiana Department of Environmental Management	Title V permit modifications	164	144	20
Iowa Department of Natural Resources	Standard air quality construction permits	62	6	56
Iowa Department of Natural Resources	Air quality complex permits	214	180	34
Michigan Department of Environmental Quality	Major air construction permits	422	98	324
Michigan Department of Environmental Quality	Minor air construction permits	143	50	93

As you begin planning your Lean event, remember that successful events require a considerable amount of planning, support from all levels of agency management, and follow-up work after the event to sustain continuous improvement. The *Starter Kit* and this *Lean in Air Permitting Guide* provide detailed information on how to plan, implement, and follow-up to a successful air permitting Lean event.

Organization of this Lean in Air Permitting Guide

The first section of this guide, "What Really Happens during an Air Permitting Lean Event?" provides a description of how Lean events typically unfold in an air permitting context, drawing from previous state agency events. The second section, "Applying the *Starter Kit* to an Air Permitting Lean Event," supplements the instructions in the *Starter Kit* by providing ideas and best practices specific to air permitting Lean events. The third section, "Improvements Identified in Lean Air Permitting Events," gives examples of air permitting process inefficiencies (and non-value-added activities) identified in past Lean events and the solutions devised to improve key permitting process steps. The fourth section, "Successful Lean Implementation and Follow-Up", provides best practices on sustaining Lean activity in air permitting Lean events. The final section presents website links to key Lean resources and provides contact information for Lean in air permitting experts.

Section 1: What Really Happens During an Air Permitting Lean Event?

The *Starter Kit* describes a variety of Lean event methods including "kaizen" and "value stream mapping." However, past experience has shown that state agencies often use a hybrid of two or more of these Lean methods for their air permitting events. Your Lean facilitator specializes in one or more Lean method or uses customized hybrid methods for their Lean events. For that reason, it will be important to work with your facilitator to identify the best method to suit your needs.

Lean air permitting events typically consist of 3-5 day event including a variety of team activities: training on Lean methods; mapping the current air permitting process; discussing inefficiencies in the current process; identifying improvements to address the inefficiencies; and mapping or defining a new, improved air permitting process. In addition, successful events require careful scoping and planning in advance, and concerted attention to post-event follow-up. The following table provides two example agendas for five day Lean events, which is the typical length of an agency's first Lean event.

Example Five Day Lean Event Agendas

Day 1	Day 2	Day 3	Day 4	Day 5
Training Day Training on Lean methods; begin mapping and measuring time to complete current work processes	**Discovery Day** Continue measuring and analyzing current work process	**Do Day** Create and map a new, improved process	**Do, Re-Do, Document Day** Implement improvements, evaluate effectiveness, and modify improvements if necessary	**Celebration Day** Present results to agency managers and staff and celebrate

Day 1	Day 2	Day 3	Day 4	Day 5
Training Day Training on Lean methods	**Current State** Draw a map of the current air permitting process and identify problems	**Future State** Map the shared vision of the new air permitting process	**Planning** Discuss how to achieve the new process and create an implementation plan	**Celebration Day** Present results to agency managers and staff and celebrate

Creating maps of the current and improved air permitting processes is a key part of air permitting Lean events. The following photographs illustrate the outcome of the process mapping stages of the Indiana Department of Environmental Management's (IDEM) Lean event focusing on the agency's title V permit modification process.

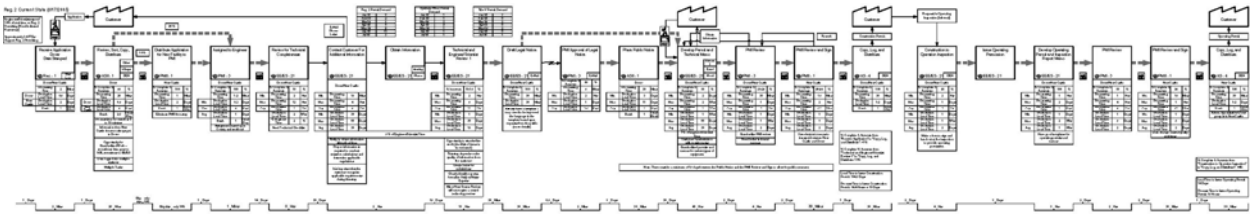
IDEM "Current State" Process Map

IDEM "Future State" Process Map

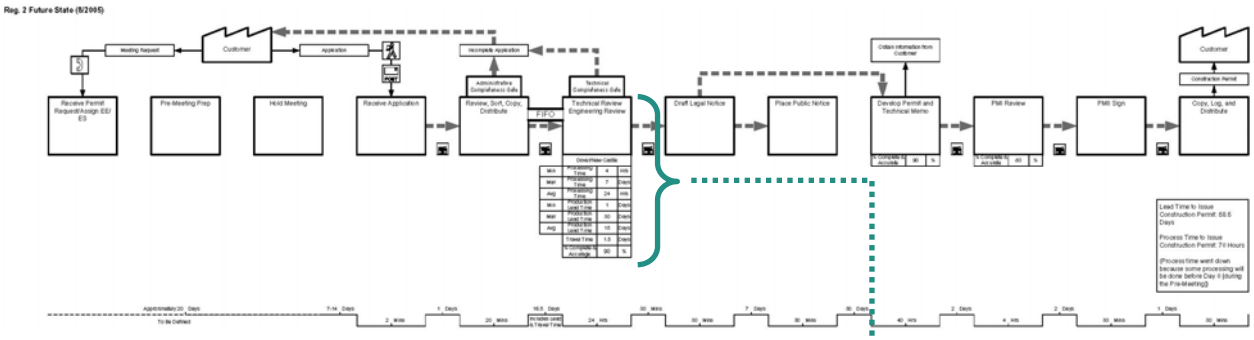
Mapping is a group process that often necessitates a large room, as even the simplest air permitting processes can be lengthy when broken into individual steps. The draft version of the value stream map is often done on a whiteboard or on butcher paper tacked on a wall during the event, as shown in the photographs above. These large initial maps may not always be the most practical reference tools, so after the air permitting Lean event concludes agencies often develop

electronic versions of their process maps. In some cases, however, it can be useful to keep a hand-prepared map up on the wall in a conference room or hallway to remind team members of the new process design and what the team accomplished. The following diagrams show Delaware Department of Natural Resources and Environmental Control's (Delaware DNREC) electronic process maps that were developed after their air quality construction permitting Lean event concluded. Please note that the diagrams are not meant to be legible, rather they are mean to be illustrative of the air permitting process before and after a Lean event. More detailed versions of the maps can be found by following the links below.

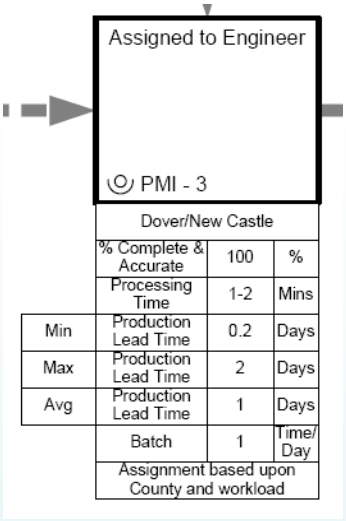
Delaware DNREC "Current State" Process Map



Delaware DNREC "Future State" Process Map



Example Magnified Section of Delaware DNREC Process Maps



Lean methods are based on the concept of continuous improvement, and most agencies hold follow-up events to their initial air permitting Lean event to encourage follow through and further improvements. Many agencies hold short follow-up events that occur at regular intervals (e.g., 30 and 60 days) to assess the efficiencies gained through use of the new air permitting process and to identify further enhancements to the process. These events tend to last one day or less. Additionally, some agencies hold longer follow-up events that focus on a specific aspect of the permitting process that was labeled inefficient during the initial event. For example, a 1-3 day follow-up event could focus on updating an air permit application form.

Section 2: Applying the Starter Kit to an Air Permitting Lean Event

This section provides details on applying the *Starter Kit* to air permitting Lean events. The boxes associated with each of the subsections below link to the related sections of the *Starter Kit*. It is recommended that you read chapters 2 and 3 in the *Starter Kit* prior to reading this section.

Selecting the Target Air Permitting Program

Many agencies new to using Lean methods choose a relatively simple air permitting process—such as minor source construction permitting—as the target for their first air permitting Lean event. However, simplicity is just one factor in deciding where to focus your Lean event; Chapter 2 of the *Starter Kit* provides further tips on selecting a target program for your event. Additionally, the table below provides examples of air permitting programs that were targeted during past Lean events.

Starter Kit Link

Chapter 2: How to Select a Lean Project

Air Permitting Programs Targeted During Past Air Permitting Lean Events

State Agency	Air Permitting Programs
Delaware Department of Natural Resources and Environmental Control	• Minor source air construction permitting • Synthetic minor air construction permitting
Idaho Department of Environmental Quality	• Air quality permit issuing process (permit to construct)
Illinois Environmental Protection Agency	• Minor source air construction permitting
Indiana Department of Environmental Management	• Title V permit modification process
Iowa Department of Natural Resources	• Air quality complex permitting; • Air quality new source construction permits
Michigan Department of Environmental Quality	• Air construction permitting (permit to install application review process)
Minnesota Pollution Control Agency	• Air construction permitting
Nebraska Department of Environmental Quality	• Air construction permitting
Virginia Department of Environmental Quality	• State minor new source construction permits; • Major New Source Review permits; • Title V permits

Setting Event Goals and Objectives

When considering goals and objectives for your air permitting Lean event, consider some of those identified for previous air permitting events, including:

- Improve the permitting process while maintaining the rigor of state air quality regulations
- Optimize program resources to allow for increased attention to other agency functions
- Reduce the air permit development timeframe
- Better understand the permitting experience from the source's perspective
- Provide the public and sources with further transparency into the permit development process
- Identify permitting program improvements that could reduce the costs of compliance for the agency and the regulated community

> Starter Kit Link
>
> Chapter 3: Scope of the Event

Setting Event Boundary Conditions

The boundary conditions selected for your event will depend on your needs. However, you should consider excluding discussion of changes that cannot be adopted immediately following an event. For example, the following two topics have commonly been excluded in past air permitting Lean events:

- Changes to agency policies or state regulations
- Processes outside of the agency's control, such as EPA reviews of draft title V permits

> Starter Kit Link
>
> Chapter 3: Set Clear Boundaries for Your Event

Agencies need to think through the extent to which the Lean team should be open to considering interpretations or changes to agency rules when determining the scope of the event. In addition, consider the example boundary conditions shown in the following box.

Example Boundary Conditions for a Lean Air Permitting Event[‡]

In Scope	Out of Scope
• Interpretation of agency policies and guidance documents • Internal organizational structure • Internal permit process and timing • Applicant permit process and timing • Electronic submittals • Application content and format • Permit and technical memo format • Permit condition content • Communication (internal/external)	• EPA regulations • Interpretation of EPA rules, policies, and guidance documents • Modifying existing agency rules • Additional resources • Permit appeal process • Permits involving enforcement action • Mandated public participation requirements • Public hearing process

Identifying Performance Metrics

You will also need to identify and document a short list of performance metrics for measuring the success of your air permitting event. The performance metrics you select should address the goals and objectives selected for your event. It is important to collect data prior to the event, especially information on key aspects of the current permitting process and, if possible, information on the perspectives and experiences of permittees and other stakeholders (e.g., customer research data). To help guide your agency in brainstorming potential performance metrics, the following list provides example metrics used for past air permitting Lean events:

Starter Kit Link

Chapter 3: Identify Performance Metrics and Pre-Work Needed

- Total number of days to develop a permit (total number of days from the receipt of the permit application to permit issuance)
- Number of days the permit clock is stopped
- Number of steps within the air permit development process that are completed on time
- Percentage of permit applications received that are incomplete or inaccurate
- Number of air permit related questions received from the public and/or sources each month
- Number of air permit applications denied
- Number of "no permit required" letters sent each month
- Number of iterations of draft permits developed (amount of re-work)

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

If your agency sets goals or objectives related to improving customer service, you may also choose to set customer perception metrics that relate to how the public, regulated community, and/or EPA view your agency's permitting process. If you choose to use this type of metric, surveys or interviews of appropriate parties can enable you to develop a baseline of customer perceptions and track changes over time.

Selecting Event Participants and Determining Roles

Using the "thirds rule" for selecting event participants can ensure an effective and successful Lean event team. For an air permitting Lean event, consider selecting a team that is comprised of representatives from the following categories:

Starter Kit Link

Chapter 3: Select Participants and Determine Roles

- A representative mix of permit engineers (e.g., more senior and more junior engineers, and/or engineers that work on different types of air permits)
- Air permit program managers from all levels (e.g., direct supervisors of the permit engineers and more senior managers)
- Administrative staff involved in the air permitting process (e.g., mail room staff or administrative staff that assist with mailing "no permit required" notices)
- Administrative managers that oversee staff involved in the air permitting process
- Compliance program staff that are involved in inspecting permitted sources
- Compliance program managers
- A representative from the agency's legal department (depending on preference, this representative can supplement one of the compliance program staff)
- A mix of source representatives (e.g., representatives from sources that differ in size, in number of permits held, and/or in quality of past permit applications)
- A representative from the regional EPA office, if the Lean event is for an air permitting process that requires EPA reviews
- A representative from an environmental non-governmental organization

As an example, a hypothetical air permitting Lean event team could be comprised of:

- 3 air permit engineers
- 3 air permit program managers (from different levels within the agency)
- 1 administrative staff member
- 1 administrative manager
- 2 compliance program staff members
- 1 compliance program manager

- 4 source representatives (from different sources)
- 1 EPA representative

Preparing for the Lean Event

Starter Kit Link

Chapter 3: Collect Needed Data and Information

Prior to your air permitting Lean event, remember to collect background materials and inputs that team members can reference during the event. For example, consider bringing some or all of the following materials to your event:

- Examples of past air permits and/or permit applications to assist in reviewing the permit process[§]
- Air permit program statistics that provide a baseline for performance metrics selected for the event
- Templates or other resources used for air permit development
- A copy of the state air quality regulations and policies
- A copy of the performance metrics you selected to measure event success
- A "voice of the customer" survey conducted with permit applicants and others can help identify more subjective metrics

You may also want to ask the team members to bring a copy of any individually- developed tools or resources. For example, a permit engineer may have created a permit development checklist or standard permit condition language that he or she uses when developing air permits.

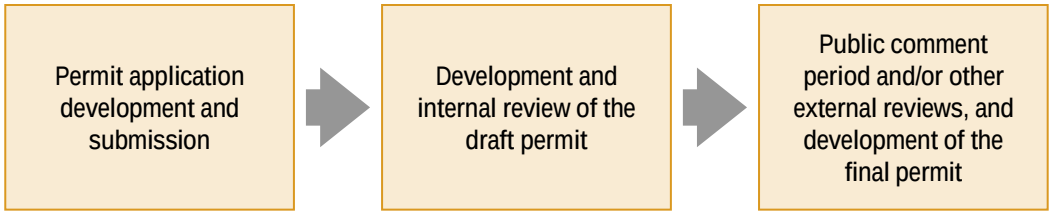
[§] Please note that the examination of past permits and applications is recommended for the purposes of examining the process. The confidential permit applicant information should not be included or be made available during the Lean event.

Section 3: Improvements Identified in Lean Air Permitting Events

Merely implementing specific solutions listed in this guide is unlikely to yield the compelling results that environmental agencies have achieved with Lean methods. Lean methods are specific approaches whose results cannot be replicated by simply brainstorming improvement ideas. A significant portion of all air permitting Lean events is spent identifying "wastes" in the current air permitting process and discussing potential improvements to address those "wastes." This section describes examples of improvements to address common air permitting process "wastes" that were identified by state agencies during air permitting Lean events.

The breadth of program activities considered during an air permitting Lean event can be extensive. To help organize the air permit program improvements listed below, this guide categorizes the improvements under three general process steps: (1) improvements related to the development and submission of the permit application; (2) improvements relevant to the development and internal agency reviews of the draft air permit; and (3) improvements to the processes for external reviews of the draft permit and development of the final air permit.

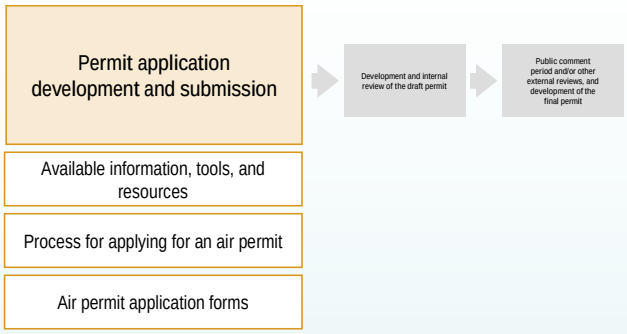
Generalization of an Air Permit Development Process



Below are lists of example air permit program improvements that were brainstormed during past state agency air permitting Lean events. The list is provided to help you start thinking about areas for improvement within your air permitting process and to help your Lean event team understand the types of ideas that can result from an air permitting Lean event. You may also find this list beneficial for setting the scope and boundary conditions for your event.

Permit Application Development and Submission

"Permit application development and submission" encompasses all activities that lead up to the emission source sending an air permit application to the permitting agency.



During past air permitting Lean events, state agencies recognized that key "wastes" in their air permitting processes include the receipt of incomplete applications, the receipt of applications that contain errors, and a lack of templates and standards for permit applicants to follow. State agencies implemented a number of improvements to address these issues, which fall into three main categories: (1) improvements to the information, tools, and resources available to permit applicants; (2) improvements to the application process; and (3) improvements to the air permit application forms. Specifically, state agencies considered or implemented the air permitting process improvement ideas listed below.

Improvements to the Information, Tools, and Resources Available to Permit Applicants

- **Update websites:** Update the air permitting sections of agency websites to include improved information on how to apply for an air permit, and include targeted information for specific industry sectors.
- **Develop a checklist:** Develop an air permitting application checklist which documents all forms and information that must be submitted with a permit application and post this checklist online.
- **Develop templates for calculations:** Develop template spreadsheets for emissions calculations and make the templates available online.
- **Identify points of contact:** Designate an agency staff member as the primary contact for air permitting questions and post this representative's contact information online, or establish an air permit question hotline.
- **Provide information on "stopping the permitting clock":** Clearly define the types of issues that can cause the permit engineer to "stop the clock" during permit development and communicate these with sources.
- **Provide information on permit denials:** Provide a clear description of common reasons for the agency to deny air permits, and the process followed when permits are denied.
- **Perform outreach on air permitting processes:** Actively perform outreach to the regulated community on the air permitting process through targeted newsletters or electronic bulletins.
- **Perform outreach on rule changes:** Perform targeted outreach to the regulated community for any air quality rule changes.
- **Work with the state business development office:** Establish a working relationship with the state business development office to enhance joint air permitting communication opportunities.
- **Work with compliance assistance staff:** Ask compliance assistance staff to discuss the air permitting program procedures with sources.
- **Get feedback from permit applicants:** Actively request feedback from permit applicants on the air permitting process and tools available to applicants.

Improvements to the Permit Application Process

- **Set up pre-application meetings:** Set up a formal pre-application meeting process, where sources are required to (or can elect to) meet with agency air permitting engineers and/or managers to discuss a set list of topics about their application, such as:
  - Appropriate air quality permits for the proposed construction or modification project;
  - Appropriate emissions control measures (e.g., BACT and LAER requirements);
  - Ideas for permit conditions, including existing permit conditions from previous permits held by the source or by similar sources;
  - Any questions the permit engineer may have on the source's emissions calculations (provided that the source sent a draft to the permit engineer prior to the pre-application meeting); and
  - Anticipated timeline for permit development and source review of the draft permit.
- **Require electronic submission of calculations:** Require the submission of electronic versions of emissions calculations spreadsheets at the same time the permit application is submitted to facilitate permit engineer review.
- **Tour the source:** Allow permit engineers to tour the source in conjunction with the pre-application meeting if they are not familiar with the source.

Improvements to the Permit Application Form

- **Improve usability of forms:** Revise and clarify air permit applications forms to improve usability.
- **Use electronic forms:** Develop electronic application forms (e.g., editable PDF forms or spreadsheets).
- **Identify required fields:** Clearly identify required fields on the air permit application forms.
- **Require applicants to highlight changes:** Require applicants to highlight proposed changes in permit amendment applications.

Development and Internal Review of Permit

"Development and internal review of the permit" includes all the activities and processes that take place within the state agency to develop the draft of the air permit that is provided to parties outside of the permitting authority for review and comment. During past air permitting Lean events, state agencies identified key "wastes" in their permit development processes include permit backlogs,

review bottlenecks, inefficient use of staff time, unnecessary data entry and rework, unbalanced allocation of work, lack of templates and standard language, and poor communication during the development process. State agencies considered a number of improvements to address these air permit development issues, which fall into four main categories: (1) improvements to communication with the source and the public during permit development; (2) improvements to permit engineer processes and tools; (3) improvements for managing the permit development process and training staff; and (4) improvements to review and signature processes for draft permits. Specifically, state agencies considered or implemented the air permitting process improvement ideas listed below.

Improvements to Communication with the Source and the Public during Permit Development

- **Post permit development status online:** Develop an online database or tracking system that lists the status of pending permit applications.
- **Ask the source to provide a single point of contact:** Request that the source identify a single point of contact and, in cases where the sources work with a consultant, coordinate with its consultant when contacting the state agency.
- **Develop a plain English guide to air permitting:** Develop a plain English guide to the air permitting process and post this guide online, with the goal of minimizing the number of queries received from members of the public.
- **Minimize lobbying:** Engage industry to develop agreements to help minimize lobbyist congressional calls.

Improvements to Permit Engineer Processes and Tools

- **Clarify the process for sending "no permit required" letters:** Clarify the process for "no permit required" letters and designate non-engineer staff to manage distribution of these letters.
- **Return permit applications that do not pass the administrative completeness check:** Return permit application to source (deny the permit) immediately if it does not pass the administrative completeness test instead of "stopping the clock" on the permit development (in other words, take the permit out of the engineer's queue so that he/she can concentrate on other administratively correct permit applications).
- **Give the source a "welcome call":** Formalize a procedure for the permit engineer to give the source a "welcome call" at the onset of permit development to expedite further communications during the permit development process.
- **Formalize kick-off check-ins with the source:** Formalize a process for permit engineers and sources to meet at the onset of permit development to discuss permit conditions, emission calculations, and other permit requirements.

- **Formalize kick-off check-ins with managers:** Formalize a process for permit engineers and managers to check-in at the onset of permit development to discuss permit structure and conditions.
- **Give the modeler a copy of the application immediately:** If modeling is required for the permit, ensure that a copy of the permit application is given to an agency modeler as soon as the application is received and that the modeler and permit engineer are working under similar timelines.
- **Bring in compliance and legal experts early:** Ensure that compliance and legal expertise are utilized early in the permit development process.
- **Create a technical review checklist:** Create a checklist for technical reviews of permit applications.
- **Block time for communicating with the source:** At the onset of permit development, schedule time blocks for permit engineers and permit applicants to discuss progress on the permit development and any questions the engineer may have on the application.
- **Block "no-interruption" time:** Maximize time available for permit engineers to focus on permit development by shortening internal meetings, arranging blocks of "no-interruption" time for engineers, posting "quiet time" signs, and designating time blocks for engineers to respond to phone inquiries.
- **Update air permit templates:** Update the air permit templates (e.g., use a table structure for permit conditions).
- **Develop a clearinghouse of standard permit language:** Develop a clearinghouse of standard permit conditions, rules, and emission factors for permit engineers to reference during permit development.
- **Incorporate rules by reference:** Develop a process for permit engineers to incorporate rules by reference in air permits.
- **Modifications or upgrades to existing information systems or tools:** Lean event teams may opt to modify existing information system tools and or implement new electronic tools to aid in permit tracking.

Improvements for Managing the Permit Development Process and Training Staff

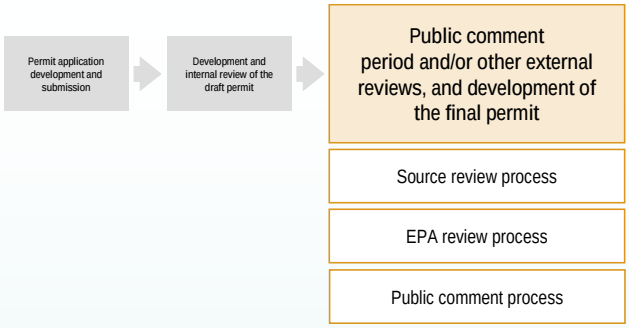
- **Use project management software:** Track permit development and staff workload using a tracking board or project management software.
- **Communicate permit development timelines and deadlines:** Clarify deadlines and timelines for phases of air permit development (e.g., administrative and technical reviews, development of permit conditions, and managerial reviews of draft permits) and communicate these with engineers, modelers, and permit program managers.
- **Clarify prioritization and staffing policies:** Clarify policies on prioritization of permits (e.g., implement a first-in, first-out policy), how to manage backlogs, and when and how to use consultants to supplement agency permit engineers.

- **Implement a rewards system:** Implement a rewards system or other bonus to decrease employee turnover.
- **Develop updated training materials:** Develop updated training materials for new permit engineers which incorporate state agency procedures and utilize existing training resources provided by other parties (e.g., NACAA, CenSARA, CARB, or consultants).
- **Cross-train staff:** Cross-train staff and ensure that there are designated back-ups for critical duties.
- **Encourage permit engineers to mentor each other:** Have more junior permit engineers shadow more senior permit engineers for the development of a complicated permit as part of ongoing training.
- **Encourage permit engineers and managers to discuss FAQs:** Hold internal meetings between permit engineers and managers to discuss air permitting questions and processes.
- **Reconfigure the office layout:** Reconfigure the office layout to facilitate better workflow.

Improvements for Review and Signature Processes for Draft Permits

- **Streamline internal review processes:** Streamline and formalize permit review processes for state agency managers (decrease the number of hand-offs by minimizing the number of parties reviewing the permit drafts and/or the number of times the draft permits are reviewed).
- **Switch to electronic reviews:** Complete reviews of draft permits electronically and send comments using "track changes".
- **Improve systems for tracking comments:** Develop processes or systems for tracking managers' comments on draft permits.
- **Use permit tracking numbers:** Use a unique permit number to more effectively track draft permits internally.
- **Increase number of managers that can approve permits and notices:** Authorize more than one manager to sign off on public notices and approve draft permits for source review.

External Reviews of the Draft Permit and Development of the Final Air Permit



"External reviews of the draft permit and development of the final air permit" encompasses all external reviews of the draft air permit and development of the final air permit that incorporates changes based on these external reviews. It is important to note that for some air permitting programs, these

external reviews occur multiple times during permit development or are incorporated earlier in the permit development process. In addition, not all air permitting processes require EPA reviews or public comment periods, so some of the improvements listed below may not apply to your air permit process. During past air permitting Lean events, state agencies recognized that a key "waste" in their external permit review processes is unnecessary rework caused by improper timing and planning for external reviews. State agencies implemented or considered a number of improvements to address this issue, which fall into two main categories: (1) improvements to the processes for sources and EPA to review draft permits and (2) improvements to the public comment process. Specifically, state agencies considered or implemented the air permitting process improvement ideas listed below.

Source Review Process

- **Allow the source to review the draft permit earlier or more often:** Move the source review of the draft permit to as early in the permit development process as is possible, or allow multiple reviews of the draft permit at various points in permit development.
- **Ensure source buy-in to draft permit before public comment period:** Ensure that the source has bought into the permit before it is sent for public review.

EPA Review Process

- **Standardize processes for EPA reviews:** Standardize review timeframes and response processes for EPA air permit reviews.

Public Comment Process

- **Develop templates and standard language for responding to comments:** Develop standardized templates and language for permit engineers to use when responding to public comments.
- **Alert senior management of significant public comments:** Institute a procedure for permit engineers to alert management early if there are comments that will be difficult to address or respond to.
- **Provide guidance to the public on submitting comments:** Develop a guidance document aimed at helping the public understand best practices for expressing and submitting comments on air permits.
- **Decrease public review timeframes:** Decrease the length of public comment and public notice periods.
- **Coordinate public hearing and public comment period timeframes:** Institute parallel schedules for public hearings and public notices.

Section 4: Successful Lean Implementation and Follow-up

While significant progress is typically made in designing and implementing air permitting process improvements during a Lean event, successful implementation hinges on effective follow-up. Agencies have found that several key actions can ensure that improvements and results are sustained into the future:

Starter Kit Link

Chapter 4: Sustaining Lean Improvements

- **Documentation and training on the new process:** People need to know what the new air permitting process is. Agencies have posted the new value stream map or process map so that all can see it; some agencies make a fresh, clean version using a process mapping software program so it can be easily posted and distributed. Staff must be trained on the new process, particularly those who did not participate in the Lean event. There may also be a need to update or write new office procedures.
- **Follow-up meetings:** Since it is often not feasible to fully implement the new process during the Lean event, there is typically a list of follow-up actions. Agencies usually conduct 30, 60, and 90-day follow up meetings to review the status of action items, to hold team members accountable for completing them, and to review how the new process is doing and make adjustments as appropriate. Some agencies also find it useful to conduct 6-month and 1-year follow-up meetings to ensure that the new air permitting process is performing well and to identify steps to prevent "backsliding".
- **Management support:** It is very important for air permitting program managers, and their superiors, to clearly communicate their support for the new air permitting process. All employees must understand that management is fully behind the new process and that "doing things the old way" will not be tolerated. At the same time, management can let staff know that communication is encouraged—if things are not working well in some aspects of the new process, the team can discuss adjustments and improvements.

Keeping with the spirit and philosophy of Lean, some agencies view their initial Lean air permitting events as the starting point for fostering a broader continuous improvement culture. For many processes, organizations will conduct a kaizen improvement event on the same process every few years, with mini-events and follow-up meetings held in between to assess performance and to identify and make incremental improvements. Holding a kaizen event is not just a one-shot improvement effort. Instead, it is the beginning of a process to engage employees in continuous process improvement, where the team continues to adjust the air permitting process to get better results—"to make it good for all."

As you can see Lean events have been successful in quickly identifying and implementing a broad range of solutions to improve air permitting processes. While the Lean journey takes hard

work and perseverance, the power of harnessing the hearts and minds of employees for achieving excellence can be transformative, leading to satisfied constituents, empowered and engaged employees, passionate leaders, and improved air permitting processes. We encourage you to take time to learn more about opportunities to apply Lean to air permitting and share your own experiences.

Section 5: Further Information and Contacts

This guide presents a snapshot of Lean air permitting experience, and is intended to be a living document. If you would like to share your experiences and ideas in future versions of this guide, please contact Jamie Burnett at EPA's Office of Policy, Economics and Innovation. Other contacts and Lean in air permitting resources are also listed below.

- Jamie Burnett
  EPA Office of Policy, Economics, and Innovation
  National Center for Environmental Innovation
  Burnett.jamie@epa.gov

- EPA's Lean website:
  http://www.epa.gov/lean/

- Lee Garrigan
  Environmental Council of the States
  lgarrigan@sso.org

- Environmental Council of the States (ECOS) Lean website:
  http://www.ecos.org/section/projects/?id=2292

Administrative Lean Products

- *Working Smart for Environmental Protection: Improving State Agency Processes with Lean and Six Sigma:* http://www.epa.gov/lean/toolkit/LeanGovtPrimer.pdf

- *Lean in Government Starter Kit: A Practical Guide to Implementing Successful Lean Initiatives at Environmental Agencies:* http://www.epa.gov/lean/starterkit/

United States Environmental Protection Agency
www.epa.gov/lean
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