



# Lean Continuous Process Improvement Training Strategy and Capacity Building Efforts at EPA

July 1, 2015

Prepared by:

United States Environmental Protection Agency

Office of Policy, Office of Strategic Environmental Management

Evaluation Support Division, Lean Team





A well-rounded Training and Capacity Building framework that emphasizes a combination of education, experiential and mentoring opportunities that support: 1) EPA’s long-term culture change goal; and 2) the unique Continuous Process Improvement (CPI) Lean capacity building needs within the Agency (National Program Managers (NPMs) and Regions) is essential. A number of Regions and NPMs have developed alternative capacity building models and sought external sources to provide CPI training (including Lean and Lean Six Sigma) within their respective organizations. We’re excited by the diversity of CPI capacity building models that have emerged recently however, the variation in training has raised some questions within EPA’s Lean Community of Practice (CoP) about issues related to a standardized curriculum and the adoption of a CPI certification program (e.g., “Belt” system) for practitioners with advanced skills. The purpose of this document is to communicate EPA’s strategy and offer guidance regarding these issues.

- **CPI Practitioner Core Competencies.** EPA wholeheartedly supports efforts to build CPI capacity through a variety of fee-based training opportunities secured through academic institutions, for-profit vendors and/or by our Federal partners at no cost. Ultimately, the CPI approach and training model organizations select must align with and support their long-term goals, needs, budget and access to expert trainers.

The growing diversity of CPI training models and content adopted across EPA necessitates standardization and the development of a yardstick against which to ensure the readiness of CPI practitioners who wish to apply their skills at EPA. With this in mind, EPA has developed a framework of core competencies that encompass three components: 1) a Body of Knowledge; 2) a Body of Experience and; 3) Continuous Learning. Table 1 below provides an overview of the framework. Table 2 includes examples of recommended courses, content and actions for each core component included in the framework. The framework is not intended to be prescriptive. However, it is, designed to serve as guidance for current and emerging CPI practitioners to: a) deepen their knowledge, b) hone their skills, c) augment and enrich their practical experience; and d) ultimately prepare each practitioner to apply CPI concepts, tools and techniques to support the successful execution of CPI projects at EPA. In addition to helping to inform the development of the practitioner’s Individual Develop Plan (IDP), these core CPI components/competencies may be particularly useful in guiding the development of CPI training models, curriculum and in securing training services from vendors.

**Table 1. EPA Continuous Process Improvement (CPI) Practitioner Core Competencies**

Table 1. EPA Continuous Process Improvement (CPI) Practitioner Core Competencies					
I. Body of Knowledge (Understand Lean Concepts, Principles, Practices and Tools)	II. Body of Experience (Apply Lean Tools and Demonstrate Results)		III. Continuous Learning (Maintain Existing Skills and Develop New Skills)		
Coursework	Project Completion	Demonstration of Results	Coaching	Mentoring	Advanced/ Specialized Courses
Successful completion of CPI facilitation course and requirements	Lead at least one CPI project at EPA	Document measurable results from the implementation of the CPI project	Participate in coaching opportunities by shadowing expert facilitators	Mentor new Lean Practitioners	Take refresher courses annually



- **CPI Certification Program.** EPA does not have a CPI Certification Program. Although we avidly support efforts to customize CPI programs to meet the respective needs and continuous improvement goals of the organization, we believe: 1) the diversity of CPI goals, 2) the resource investment (budget and FTE) required to design, implement and sustain a high caliber certification program; 3) the variation in the quality of training; and 4) limitations regarding the transferability of a CPI certificate are important considerations that make us hesitant to support and reluctant to endorse the development of a CPI certification program for the Agency. These considerations are discussed further below.

- *Elements of a CPI Certification Program.* A certification program is typically designed to “confirm” an individual’s capabilities to meet core competencies established by an organization or accrediting body. CPI certification programs often consist of three to four components:

**1) Body of Knowledge** – mastery of subject matter via participation in training/instruction along with the completion of a written proficiency test or exam);

**2) Body of Experience** – a portfolio of work demonstrating application of tools to a project and demonstrable results;

**3) Level of Knowledge and Experience** – a hierarchical system to designate a practitioner’s level of knowledge, experience, skill and ability. Six Sigma and Lean Six Sigma institutions employ a “belt system” (White, Yellow, Green, Black and Master Black Belt) with Master Black Belt being the most advanced, while Lean institutions (e.g., the Lean Shingo Institute) rely on a tiered Bronze, Silver and Gold system (with Gold as the most advanced); and

**4) Maintain Certification and Re-Certification** — maintain existing skills through continuous learning (e.g., participation in refresher or advanced courses); periodic recertification ensures there is no lapse in credentials and skills.

- *Clear Understanding of CPI Capacity Building Goals.* Ultimately, the effectiveness of any CPI training capacity building effort is the extent that it supports the overall CPI goals of the organization. An important first step of determining whether and what type of certification program is warranted, is assessing how and to what degree it aligns with and supports the organization’s long-term CPI goals. The Agency’s long-term CPI goal is to create a culture of continuous improvement that embraces Lean thinking and routinely adopts and uses Lean practices that deliver environmental results. Overreliance on any capacity building model that emphasizes testing, and the completion of requirements is not likely to change or transform EPA’s culture.
- *Resource Requirements.* High quality and sustainable certification programs similar to those established by recognized CPI certification bodies such as the American Society for Quality

### Hierarchical System of Knowledge and Experience (e.g., “Belt System”).

EPA does not have a system to classify the level of knowledge and experience for its practitioners (“belt” or otherwise). Given the diversity of organizational goals, processes, CPI skills and preferences for continuous improvement techniques amongst NPMs and Regions, reliance on a single approach, could prove beneficial to some but restrictive to others. Consequently, EPA believes a “one-size-fits all approach” might impose artificial limitations on learning, access to CPI experts and the vast array of available tools and training opportunities which has the potential to impede the Agency’s CPI capacity building efforts. EPA believes an approach that offers the Regions and NPMs greater flexibility in meeting their specific needs and goals is more prudent.



(ASQ), Society of Manufacturing Engineers (SME), Federal partners and other organizations, require a significant long-term investment of time and extensive resources to: a) design, deliver and update CPI training materials; b) design, administer and grade testing standards; and c) verify and assess the satisfactory completion of certification and recertification requirements of prospective CPI candidates. The existing priorities, resources and level of effort required to design and maintain a National “best in class”, high caliber certification program far exceeds the resources available at the national level to establish and maintain such a program.

- *Variation in Quality of Training and Transferability of Credentials.* The absence of a single certifying body to recognize and certify core CPI competencies has created a wide variety of certification programs, trainers and training programs each with their own training requirements. The variety and variation of training, while beneficial to meeting the diverse needs of CPI consumers (federal, non-profit and private), also makes it difficult to assess and gauge the quality of training, validate the credentials and verify the readiness of potential candidates. Once in place, certification programs can validate the CPI candidate’s ability to complete certification requirements but that does not in and of itself validate the leadership, project management, motivational, emotional intelligence, facilitation and problem-solving skills that are so vital to leading a CPI project. In addition, with respect to the transferability of credentials, the absence of a standard governing body means that credentials earned in one setting may not be recognized in another.

In sum, while the Agency encourages the pursuit of CPI training models/approaches and capacity building efforts that support diverse needs, EPA embraces an approach that establishes an expectation that EPA employees who are CPI practitioners and wish to apply their skills at EPA will strive to attain the CPI Practitioner Core Competencies (e.g., 1) Body of Knowledge; 2) Body of Experience and; 3) Continuous Learning outlined in Table 1 and 2 of this document. Rather than invest in developing a CPI Certification Program or relying on a hierarchical system (“belt” or otherwise) to classify the level of knowledge and experience of its CPI practitioners, EPA will rely on the CPI Practitioner approach to maximize the flexibility of offices to develop their employees through a variety of approaches and minimize resources devoted to such activities .



**Table 2. Recommended Knowledge, Experience and Learning for EPA CPI Practitioners**

Component(s)	Description	Recommended Content /Action (Includes but is not limited to the following)
<b>I. Body of Experience (Apply Lean Tools and Demonstrate Results)</b>		
Course work	Successful completion of CPI (e.g., Lean or Lean Six Sigma) Facilitation course and requirements.	<ul style="list-style-type: none"> <li>• History of Lean &amp; Key Philosophers</li> <li>• Lean Principles</li> <li>• Lean Culture</li> <li>• 8 Wastes (DOWNTIME)</li> <li>• PDCA</li> <li>• Project Selection</li> <li>• Flow &amp; Pull Systems</li> <li>• Charter Development</li> <li>• Voice of the Customer</li> <li>• Value –added &amp; Non-Value – added</li> <li>• Process Mapping (Current &amp; Future State)               <ul style="list-style-type: none"> <li>○ Swim Lanes</li> </ul> </li> <li>• Value Stream Maps</li> <li>• Diagnosing Root Causes</li> <li>• Implementing Improvements               <ul style="list-style-type: none"> <li>○ Mistake Proofing (Poka-Yoke)</li> <li>○ Standard Work</li> <li>○ 5S</li> <li>○ Visual Management Controls</li> <li>○ Gemba Walk</li> <li>○ Just Do It</li> <li>○ Planning, Facilitating and Execution of Projects &amp; Kaizen Events</li> </ul> </li> <li>• Results               <ul style="list-style-type: none"> <li>○ Key Metrics: Lead time, processing time (touch time), number of process steps, percent complete and accurate, participant satisfaction</li> <li>○ Tracking Results</li> <li>○ Communicating Results</li> <li>○ Ensuring Continuous Improvement; holding gains</li> </ul> </li> <li>• Project Management Skills</li> <li>• Facilitation Skills</li> </ul>
<b>II. Body of Experience (Apply Lean Tools and Demonstrate Results)</b>		
Project Completion	Successfully lead and complete at least one CPI project at EPA.	CPI Practitioner facilitates a Kaizen Event or Value-Stream Mapping.
Demonstrated Results	Document measurable results from the implementation of CPI	CPI Practitioner enters project results into EPA's Metrics Tracking System.



**Table 2. Recommended Knowledge, Experience and Learning for EPA CPI Practitioners**

Component(s)	Description	Recommended Content /Action (Includes but is not limited to the following)
	project via EPA’s Lean Metrics Tracking System.	
Other Experience	Develop skills that will enhance professional development and aid in the successful execution of CPI projects.	<p>CPI Practitioners are encouraged to complete courses in the areas below. Please refer to the Lean Training Page for a recommended list of online and in-person courses.</p> <ul style="list-style-type: none"> <li>• Leadership</li> <li>• Problem Solving</li> <li>• Motivation</li> <li>• Project Management</li> <li>• Facilitation</li> <li>• Change Management</li> </ul>
<b>III. Continuous Learning (Maintain Existing Skills and Develop New Skills)</b>		
Coaching	Participate in coaching opportunities by shadowing expert facilitators	CPI Practitioner shadows an expert facilitator and as opportunity permits, assists in facilitating some component of the event.
Mentoring	Mentor new Lean Practitioners	CPI Practitioner volunteers to consult with less experienced practitioners to offer advice in event planning, problem solving and the selection of appropriate tools and techniques to apply to a project.
Advanced/Specialized Courses	Take refresher courses annually	Practitioner continues the learning process by participating in CPI conferences and forums, and attending advanced or specialized courses. Developing Blog contributions or written articles for publication may also foster continuous learning.