

## LPAT: Logistics and Process Analysis Tool

### The Power of Combining Software

The Decision and Information Sciences Division at Argonne National Laboratory has developed a portfolio of modeling tools to simplify the movement of equipment, cargo, or personnel through a supply chain. The Logistics and Process Analysis Tool (LPAT), now under development, combines the capabilities of two existing discrete modeling tools – ELIST (*Enhanced Logistics Intra-Theater Support Tool*) and PAT (*Process Analysis Tool*) – into one comprehensive analysis system.

Analysts can use the ELIST or PAT components *independently* or *in concert* with one another as the scenario dictates. When used individually, ELIST and PAT are powerful tools for analyzing the multi-scale impact of supply chain operations. When used together as LPAT, the *emergency management or public health professional* gains the ability to test, analyze, and understand how the interaction between individual parts of the supply chain influence each other. When used in scenario planning and training exercises, LPAT will permit users to determine the likely consequences of transportation and process decisions *before* commitments are made.



LPAT will make it possible to track supplies, such as SNS (Strategic National Stockpile), from storage to transport to delivery to distributor. SNS is shown loaded on an aircraft.

### Benefits for Emergency Management and Public Healthcare Professionals

- Answer real-world questions about actual situations
  - What is the effect on dissemination of prophylaxis during a Strategic National Stockpile deployment if nursing staff is reduced by 25 percent?
  - How does capacity affect deployment to dispensing and vaccination centers?
- Test and evaluate logistics issues before an incident and evaluate response alternatives after an event
- Use as a planning tool to prepare for an incident of local, state, or national significance
- Master connections among strategic, tactical, and operational levels of deployment
  - Determine routing/re-routing needs
  - Isolate potential infrastructure congestion or limitations
- Assess hazard impacts, such as damage to housing, hospitals, and utilities, and analyze the assets required for response/recovery, such as trucks, power generators, staff, and supplies



An EMT pushes a "patient" into a temporary emergency room during an exercise.

## Alternative LPAT Applications

LPAT's combination of transportation and processing analysis can function as a useful platform within and across many domains:

- Evacuation
  - Identify unique transportation requirements for the special-needs population
  - Recognize existing transportation alternatives for people leaving cities where there is limited or no gasoline
- Multi-mode Transportation Analyses
  - Ascertain additional assets required for shipment
  - Determine the impacts of infrastructure and material-handling investments
- Emergency Management and Public Health Deployment
  - Predict arrival time of personnel
  - Assess performance of various resupply and distribution schemes
- Epidemiologic Modeling
  - Simulate multi-agent infectious diseases
  - Support multiple disease modeling techniques (e.g., agent-based, system dynamics)

## Why LPAT and Why Argonne?

- LPAT will assist *emergency management and public health professionals* in defining gaps in response and recovery needs:
  - What do I have?
  - What will I need?
  - Where can I get it?
  - How will I move it?
  - How fast can I get there?
  - What alternatives do I have?
- LPAT will facilitate the ability of *emergency management and public health professionals* to manage equipment, supplies, and personnel to support effective disaster response-and-recovery operations.
- With advanced planning, training, and exercises supported by Argonne National Laboratory, LPAT can assist public affairs officials in providing timely and accurate disaster recovery information.
- Argonne has 30 years of experience in supporting national, regional, state, and local emergency management activities with systems-based emergency planning, training, and exercising.
- The combination of Argonne's dedicated personnel, experience, resources, and reputation equal a partner that federal, state, and local emergency management won't outgrow.

### Argonne National Laboratory – Fostering solutions built to LAST...

Argonne **listens** to clients to understand their working environment and needs

Argonne **assesses** what they've heard to identify potential technology solutions to client requirements

Argonne **solves** the problem by combining ideas and technology know-how to meet the specified challenge

Argonne **transfers** the solution by delivering a useful product, exceptional training, and long-term

**Learn more about LPAT and other Argonne-developed models at:**

<http://www.dis.anl.gov/>

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