

## Homeland Security plans to modernize Coast Guard navigation system

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The Homeland Security Department plans to modernize and upgrade the Coast Guard's terrestrial [Long Range Navigation \(LORAN\) system](#) to serve as backup to the satellite-based Global Positioning System, which is used for navigation to determine location and precise timing information. The decision ended a cliffhanger policy-making process that started in January 2007, when DHS and the Transportation Department asked for [public comment](#) on whether to shut down LORAN or upgrade it.

On Feb. 7, DHS spokeswoman Laura Keehner said the department decided to use an enhanced version, eLORAN, to provide backup to GPS. The system will "mitigate any safety, security or economic effects of a GPS outage or disruption," she said

The Transportation Department's Volpe National Transportation Systems Center urged development of an alternative to GPS in a [2001 report](#) which concluded the satellite-based system could be knocked out by jamming its high-frequency, low-power signals. The report suggested LORAN as a backup. Keehner added that eLORAN has the capability GPS lacks in urban canyons as well as in heavy foliage to provide precise location and navigation information to first responders working in such areas.

The Coast Guard operates 24 LORAN stations nationwide to help users, including ships and planes, determine their location. Nineteen have been upgraded to eLORAN, which broadcasts a data channel to improve accuracy, signal availability and integrity of information. The International LORAN Association says the modernization boosts position accuracy to between 8 feet and 65 feet, with availability measured at 99.9 percent and integrity at 99.99 percent.

The DHS decision marks a "tremendous step forward" for eLORAN and a long-needed GPS backup, said Zachariah Conover, president and chief executive officer of Maine-based CrossRate Technology, which has developed integrated GPS/LORAN receivers for maritime users. Priced from \$1,000 to \$1,500, the equipment will go on sale in April, he said.

Despite Homeland Security's endorsement, eLORAN funding remains a problem, Conover said. The proposed [fiscal 2009 DHS budget \(page 98\)](#) for eLORAN is \$34.5 million. Conover estimated it will take \$45 million to operate the system annually. DHS said in its [budget \(page 501\)](#) that the system would be transferred from the Coast Guard to the [National Communications System](#) (page 513), which will oversee LORAN modernization.

On Oct. 5, 2007, Coast Guard Capt. Curtis Dubay told the [National Position Navigation and Timing Advisory Board](#) that modernization of LORAN system would cost \$400 million plus another \$50 million for expansion. Conover said the Coast Guard estimate is high and that the work could be done for about \$120 million.

Mike Harrison, a consultant with Aviation Management Associates in Alexandria, Va., who wrote a white paper on [GPS backup](#) for the Federal Aviation Administration in 2006, said the eLORAN system could come in at less than a third of the cost to operate and maintain existing FAA ground navigation equipment. Such systems include the [VHF Omni-Directional Radio Range \(VOR\)](#) beacon that pilots use to get their bearings as they navigate cross country.

Harrison expected business aircraft and the 400,000 private pilots flying within the United States to embrace eLORAN. But commercial airlines, he said, will stick with GPS and another ground-based system, Distance Measuring Equipment, because LORAN and eLORAN systems do not have [worldwide coverage](#).

CrossRate's Conover said eLORAN, which transmits high-power, low-frequency signals, can work much better in urban environments than GPS, which transmits high-frequency, low-power signals, and should be a boon to both first responders and truck fleet operators. Urban canyons can cause GPS outages as high as 80 percent of the time because receivers have a hard time picking up satellite signals, he said.

eLORAN also will provide a reliable backup for timing signals essential to the operation of all types of telecommunications networks, including cellular systems, Conover said. The eLORAN signals are so strong, network operators will be able to pick up timing data without installing an external antenna.