# Center for Transportation Analysis

Transportation System Readiness and Resiliency Assessment Framework: Readiness and Assess Resiliency of Transportation Systems (Infrastructure, Systems, Organization and Services) to Deter, Detect, Protect, Respond and Recover from Various Attacks

Readiness and Resiliency Assessment (RRAS)

After September 11, 2001, identifying security vulnerabilities at ports, pipelines, highways, transits, and railways became a major priority for the U.S. government. The effectiveness of improvements being made to transportation system security must be measured in order to ensure that progress is being made towards achieving national security goals and to determine the most effective allocation of scarce resources for security upgrades. The Transportation Security Network Management (TSNM) office of the Transportation Security Administration (TSA), is responsible for the security of the nation's maritime and land transportation systems, sponsored the development of a system to help quantify the current "state-of-readiness" of the nation's transportation system to a resilient system. Readiness is defined as a quantified measure of an asset's current ability to prevent, respond to, and recover from attack by chemical, biological, radiological, nuclear, large explosives, small explosives, or conventional arms. Resiliency measures a transportation system's ability to absorb or recuperate from shocks or assaults and its ability to continue to provide services without catastrophic failure. Readiness is an asset based measure and supports planning, resource allocation and situational awareness for preparedness, protection, response and recovery of transportation system security measures. Resiliency is a service-based

measure and provides an assessment of transportation services (combination of infrastructure, systems, processes, organizations, and people) and supports strategic security contingencies of transportation services for the transportation system.
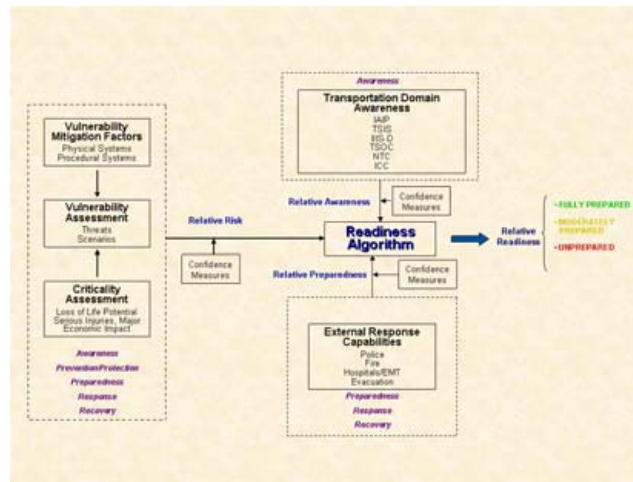
Readiness and resiliency measures provide a systematic characterization of transportation system facilities, systems, and its security, and facilitates the transition of existing transportation systems to one that is more secure, structurally sound, can absorb attacks without major damage, respond to attach and with abilities to recover quickly from an attack. RRAS assesses security readiness of an individual transportation asset or group of assets (system—mode, asset type, supply chain, state, national, operators, etc.) and transportation system services based on security measures, technology, people,

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training, etc. and threats at different scope, duration, magnitude, and severity. The RRAS can also be used to assess threats, vulnerabilities, and protective measures (i) allocate scarce resources, (ii) dynamically measure the current readiness and resiliency level leading to effective response, containment of and rapid recovery from threats, and (iii) help transition to a reliable and low risk transportation system. The RRAS framework is based on advanced computing and information concepts and is enabled by Web 2.0 technologies.