



The Homeland Security Act of 2002<sup>1</sup> was the governing document that officially formed the U.S. Department of Homeland Security (DHS) and mandated (among other things) that the department “... carry out comprehensive assessments of the vulnerabilities of the key resources and critical infrastructure of the United States.” In response to this mandate, in 2009, the DHS and its Protective Security Advisors began assessing nationally critical infrastructure assets using a targeted questionnaire, the Infrastructure Survey Tool (IST). The data collected was used to produce asset-specific protective measure information conveyed through the Protective Measures Index (PMI).

The main objective of the PMI is to provide a relative measure of the ability of a critical infrastructure asset to resist disruptive events—an indication of how well protected the asset is. The PMI has been formulated to capture the fundamental aspects of protection for critical infrastructure and facilitates the comparison of protection postures across critical infrastructure assets. Aggregate information can be used to assess prevalent sector and subsector security gaps, identify potential protective measures and enhancements to reduce potential vulnerabilities, and assist in preparing sector risk estimates.

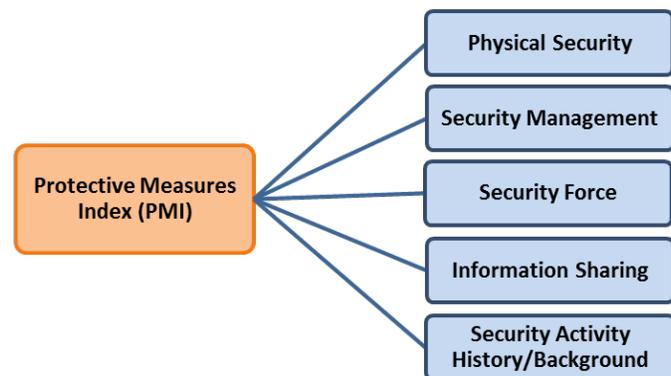
The PMI methodology generates reproducible results that can support decisionmaking concerning critical infrastructure risk management. The PMI complements other indices that have been developed — the Resilience Measurement Index (RMI) and Consequences Measurement Index (CMI) — allowing a holistic view of most components of critical infrastructure risk.

The PMI aggregates five operational dimensions of protection as shown in Figure 1: Physical Security, Security Management, Security Force,

Information Sharing, and Security Activity Background.<sup>2</sup> The PMI calculation uses decision-analytic techniques with a basis and multi-attribute utility theory. The PMI ranges from 0 (low protection) to 100 (high protection) and is based on data collected via the IST that have been weighted by subject matter experts to indicate the relative importance of each variable to the asset’s overall protection posture.

Asset-specific protection information is displayed on a Web-based tool called the IST PMI

Dashboard. The IST PMI Dashboard provides valuable information to owners and operators regarding their facility’s protection relative to similar assets.<sup>3</sup> The Dashboard can be used to create scenarios and assess relative improvement of overall facility protection when specific protective measures and/or



**FIGURE 1.—Level 1 Components of the PMI.**

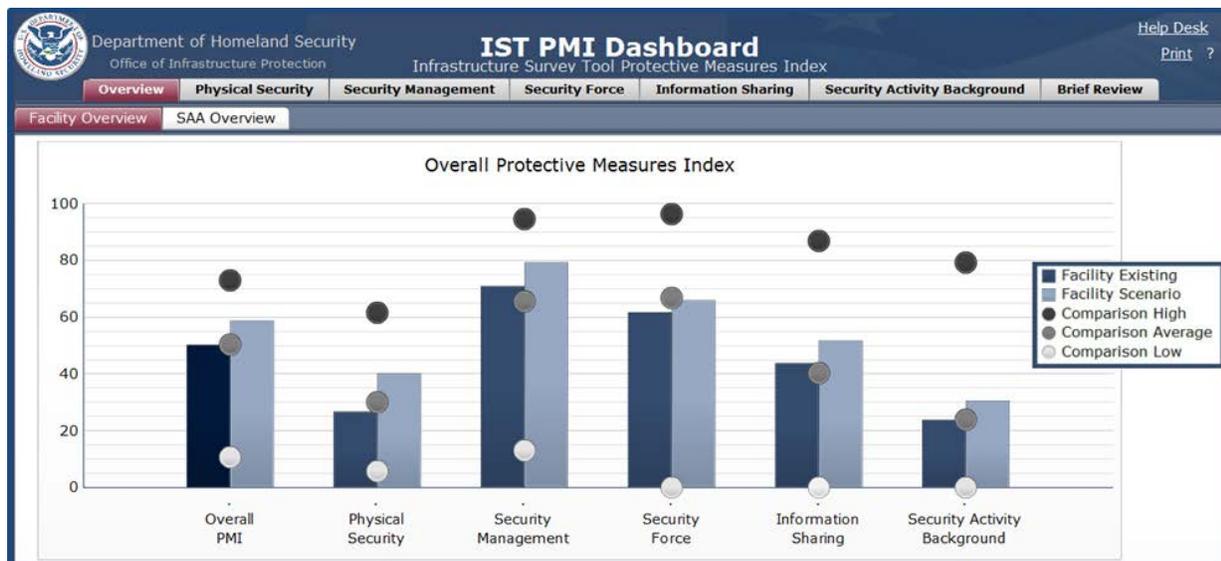
<sup>1</sup> DHS, *The Homeland Security Act of 2002*, [http://www.dhs.gov/xlibrary/assets/hr\\_5005\\_enr.pdf](http://www.dhs.gov/xlibrary/assets/hr_5005_enr.pdf), accessed April 4, 2014.

<sup>2</sup> Petit, F., G.W. Bassett, W.A. Buehring, M.J. Collins, D.C. Dickinson, R.A. Haffenden, A.A. Huttenga, M.S. Klett, J.A. Phillips, S.N. Veselka, K.E. Wallace, R.G. Whitfield, and J.P. Peerenboom, 2013, *Protective Measures Index and Vulnerability Index: Indicators of Critical Infrastructure Protection and Vulnerability*, Argonne National Laboratory, p. 10.

<sup>3</sup> The data displayed for the facility is static, reflective of the relative resilience of the facility at the time of the survey.

procedures are added or changed. Policies, procedures, or operational methods are enhancements with which the facility may increase protection.

Figure 2 is a screenshot of the IST PMI Dashboard Overview Screen. The Overview Screen displays overall PMI as well as the five main components: Physical Security, Security Management, Security Force, Information Sharing, and Security Activity Background. The sets of three dots allow the user to visually compare their facility protection stature to the low, average, and high protection postures of comparable facilities. The Dashboard's interactive "Facility Scenario" function allows the facility owner or operator to select possible protection enhancements and immediately see the resulting modified PMI (the light blue bars).



**FIGURE 2.—IST PMI Dashboard Overview Screen (Illustrative Asset).**

The PMI should be used as part of an overall risk management program and can support decisionmaking about protection, business continuity, and emergency management of critical infrastructure. It provides important information about the protective measures implemented at a given facility and how that facility compares to similar facilities. Other factors such as location, specific vulnerabilities, and a cost-benefit analysis, should also be utilized to ensure a complete picture of a facility's protection level or posture.

The asset-specific protection, used in conjunction with vulnerability information, and facility consequence and resilience information can provide decision makers with a comprehensive risk picture with which to make management and policy decisions ensuring the continued protection and resilience of our Nation's critical infrastructure.