**Responses to Dept of Commerce RFI for NTSC /NWS /NOAA on Update to National Space Weather Strategy**

**May 16, 2018**

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Ref Question #7

*Beyond regulation and grant programs, what can the federal government do to enable and advance the private sector role for capabilities, forecasting, modeling, mitigation, research, development, and observation in the space weather domain?*

The federal government should :

a. Establish and promulgate a national VISION of attaining a very robust, resilient and secure infrastructure throughout the homeland, under all known threat scenarios, within a feasible timeframe.
b. Play a key role in disseminating vital information to regional and local governing authorities as well as private sector entities to raise threat awareness in relation to space weather and related threat scenarios to the national critical infrastructure and the national security interest.
c. Undertake a rigorous assessment of the national energy system using systems engineering methods and models to enable a thorough vulnerability evaluation of all critical infrastructure in relation to multiple threat events
d. Encourage state and local governments and private sector entities to examine their regional infrastructure systems and resources, in particular their power generation and transmission systems, for risks and vulnerabilities, applying rigorous systems engineering methods as feasible.
e. Exploit the emerging trends and "strategic inflection points" in relation to ongoing microgrid projects and initiatives, seeking to leverage opportunity to serve the national security interest.

Recommendations: (Near Term)

1. The Federal Government should --
    a. Establish a special agency / office to deal with coordination and leadership of all relevant matters for protection of national critical infrastructure (e.g. – Federal Critical Infrastructure Security Office – FCISO)
    b. Appoint a highly competent individual to lead the office, preferably from the private sector or with relevant private sector background, reporting directly to the Vice President of the United States
    c. Charter the office to coordinate communication within the various departments of the federal government, with congressional committees, with state and local governments, and private sector entities, such as Infragard EMP-SIG, INCOSE, IEEE, SAE, AIAA, ISA, and similar professional engineering societies.

2. The FCISO should –
    a. Staff the office with seasoned individuals that are:
        i. experienced and technically competent in each of the critical infrastructure domains

ii. competent and experienced in systems engineering principles and practices and modeling methods and tools
iii. experienced communications professionals in messaging and channels, including social media and other means

b. Conduct and coordinate an outreach campaign to seek collaboration with professional societies to recruit systems engineering expertise, skilled modeling capability, and domain area knowledge
c. Develop various national infrastructure "reference models" to enable initial evaluation of risk factors and vulnerabilities to space weather and other threat scenarios
d. Coordinate and exploit all research on technical solutions for protecting power transmission lines and transformers, hardening facilities and sensitive electronics, while securing electronic control systems, devices, networks
e. Establish and encourage public / private partnership entities to undertake regional / local assessments of infrastructure risks and vulnerabilities. Introduce and encourage adoption of a "Community Maturity Model" as a means of measuring status
f. Motivate further assessments of ongoing and potential microgrid developments in the region for exploitation in support of critical infrastructure in the interest of local resiliency and national security
g. Promote the concept of "Community Resiliency" as the preferred method to ensure long-term survivability under extended and wide-spread power outages and loss of critical infrastructure.
h. Promote and facilitate regional / local workshops focused on "community resiliency", including the application of the community maturity model as a key measurement

Recommendations: Fed Government & FCISO(Long-term)

1. Continue the promotion of the national VISION for achieving robustness and resiliency in our critical infrastructure
2. Engage fully with collaborative organizations like Infragard EMP-SIG to provide a wide base of support
3. Advocate and support community efforts in systems engineering and modeling for assessment of local / regional infrastructure, microgrids, and resiliency metrics
4. Provide frequent communication to report on resiliency achievements, metrics, obstacles and issues
5. Continue to update and refine the national reference models on critical infrastructure and make results available to authorized local entities
6. Support local/regional partnerships in their initiatives toward achievement of "resilient communities"