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- Planetary Defense – Recent Progress & Plans**
- NEO Discovery**
- NEO Characterization**
- Mitigation Techniques & Missions**
- Impact Effects that Inform Warning, Mitigation & Costs**
- Consequence Management & Education**

Infrastructure Consequence Analysis of Destructive Events

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ABSTRACT

The National Infrastructure Simulation and Assessment Center (NISAC) proposes to contribute to this conference through presenting the results of analysis of a potential natural event with similarities to the envisioned asteroid impact. The methodology used to determine the effect from destructive events will transfer to the near earth object (NEO) analysis of an asteroid impact. NISAC has contributed analytical capabilities for incident consequence analysis of actual and simulated destructive events occurring in the contiguous U.S. since 2002. Mandated by Congress to serve as a “source of national expertise to address critical infrastructure protection”, NISAC has been charged to provide the Department of Homeland Security with infrastructure simulation and analysis of incident consequences. NISAC works regularly with the FEMA, NOAA, USGS, and other Federal agencies as well as state and local response organizations to complete these analyses. We will present the recently completed analytical baseline study of the Cascadia Earthquake and Tsunami Risk and Impact Analysis and discuss how this type of product can inform a variety of disaster planning and response activities, including the destruction occurring as a result of an asteroid impact. This report details analysis and recommendations for emergency preparedness planning and decision making necessary for a magnitude 9 earthquake on the Cascadia Subduction Zone, an

offshore earthquake fault extending from northern California to Vancouver Island. The analytical method employed studies the direct physical effects (seismic shaking and inundation due to a subsequent tsunami) to determine the direct physical destruction of facilities. The model results were used to identify the disruptions to services and key cascading impacts. These results were subsequently used to estimate the impacts to the local population, infrastructure, and the Nation's economy. The Cascadia analysis, by studying both ground shaking and tsunami impacts, presents potential consequences that are similar to the damage that would result from an asteroid impact.

NISAC will be able to contribute to the planned "tabletop" exercise through our direct experience from similar exercises in the past. Our past involvement providing support for national and regional exercises will be beneficial to the analysis of the NEO impact through recommendations for response concepts, policies, plans, procedures, and available capabilities during a destructive event. In previous exercises we have contributed to planning by providing estimated potential impact to human life, economics, damage contours for outage areas, restoration times and critical infrastructure damage in the path of an event. Our analysis further supports these efforts with considerations of interdependencies within and across infrastructures and the cascading failures and impacts that may arise out of the consequence.