

APPENDIX D: NPDIA SUPPORT TO THE NATIONAL RESPONSE FRAMEWORK

The U.S. Department of Homeland Security (DHS) released the second edition of the *National Response Framework* in May 2013.^a Table 4 in the Framework defines 15 Emergency Support Functions (ESFs) and specifies the Federal entity designated as the ESF Coordinator.

With the addition of real-time data and its expansion to cover a range of environmental events including but not limited to atmospheric storms, the NPDIA supports all 15 ESFs in either a real-time or long-term application or in both. Table C-1 highlights how activities under the NPDIA can support the ESFs in real time, for long-term applications, or for both. The following column headings are used in Table C-1 to categorize ways that NPDIA weather and water data support an ESF:

NPDIA Real-time Support to ESFs

- **Monitor/assess event extent/severity.** NPDIA activities can collect weather and water data critical to understanding the event as it is occurring.
- **Real-time impacts on ESF systems in event.** NPDIA weather/water data can monitor in real time how the systems and infrastructure for this ESF are being affected as the event occurs.
- **Support emergency response/first responders.** NPDIA weather/water data can inform the emergency response and aid first responders as the event is unfolding.
- **Support post-event response/recovery.** NPDIA weather/water data collected during the event can support response and recovery activities for this ESF in the immediate aftermath of the event.

NPDIA Long-term Support to ESFs

- **Assess post-event infrastructure condition.** NPDIA data collection during and after the event supports assessments of how the infrastructure on which this ESF is focused has been affected by the event.
- **Improve ESF system robustness to event type.** The NPDIA weather/water data collected during and after the event can be used to increase the robustness of infrastructures and systems on which this ESF focuses.
- **Improve models of infrastructure response to event type.** The NPDIA weather/water data collected during and after the event can be used to improve models of how infrastructure and systems on which this ESF focuses will respond to other events of this type.
- **Improve risk assessment/management for future events.** The NPDIA weather/water data collected during and after the event can be used to improve risk assessment of the ESF systems and infrastructure and to manage the risks associated with future events of this type.

The text descriptions in Table C-2 identify and explain the ESF-specific support capabilities highlighted in Table C-1.

^a The *National Response Framework* is available online at www.fema.gov/media-library-data/20130726-1914-25045-1246/final_national_response_framework_20130501.pdf [December 2015].

Table D-1: NPDIA Support to Emergency Support Functions

	NPDIA real-time support to ESFs				NPDIA long-time support for ESF			
	Monitor/assess event extent/severity	Real-time impact on ESF systems in event	Support emergency response/first responders	Support post-event response/recovery	Assess post-event infrastructure condition	Improve ESF system robustness to event type	Improve models of infrastructure/system response to event type	Improve risk assessment/management for future events
Emergency Support Functions								
ESF #1 Transportation	X	X	X	X	X	X	X	-
ESF #2 Communication	-	X	X	-	-	-	X	X
ESF #3 Public Works and Engineering	-	X	-	-	X	X	X	-
ESF#4 Firefighting	X		X	-	-	-	-	X
ESF#5 Emergency Management	X	X	X	X	-	-	X	-
ESF#6 Mass Care, Emergency Assistance, Housing, and Human Services	-	-	-	X	-	X	-	X
ESF#7 Logistics Management and Resource Support	-	-	X	X	-	X	-	X
ESF#8 Public Health & Medical Services	-	X	-	-	-	-	X	X
ESF#9 Search and Rescue	X	-	X	-	-	X	-	-
ESF#10 Oil and Hazardous Materials Response	X	-	X	X	-	-	X	X
ESF#11 Agriculture & Natural Resources	X	-	-	X	-	X	-	X
ESF#12 Energy	X	X	-	-	-	X	X	-

Appendix D

	NPDIA real-time support to ESFs				NPDIA long-time support for ESF			
	Monitor/assess event extent/severity	Real-time impact on ESF systems in event	Support emergency response/first responders	Support post-event response/recovery	Assess post-event infrastructure condition	Improve ESF system robustness to event type	Improve models of infrastructure/system response to event type	Improve risk assessment/management for future events
Emergency Support Functions								
ESF#13 Public Safety and Security	-	-	X	X	-	X	-	X
ESF#14 Long-Term Community recovery	-	-	-	-	X	-	-	X
ESF#15 External Affairs	-	X	X	X	X	-	-	X

Table D-2 Descriptions of NPDIA Support to ESFs

ESF and Coordinator	NPDIA Real-time Support to ESFs	NPDIA Long-term Support to ESFs
ESF #1 – Transportation Coordinator: Dept. of Transportation	Pre-event deployments could yield on-site environmental data (e.g., wind and flooding data) needed to refine road and bridge conditions and aide routing of evacuations and relief supplies before, during, and after, the event.	Wind speed, direction, and damage data and high-water elevation and flooding data needed to define event strength and frequency and assess infrastructure performance and safe window of operation (e.g. bridge crossings). Such information could lead to more robust transportation systems and better models of system performance during severe weather.
ESF #2 – Communications Coordinator: DHS/National Communications System	Continuous data during an event can be used to anticipate and respond to impacts to communication systems.	Weather and water impact information can be used to prevent placement of communications equipment in flood areas and can be used to understand the environmental impacts on communications equipment.
ESF #3 – Public Works and Engineering Coordinator: U.S. Army Corps of Engineers	Real-time instrumentation could provide data that would improve estimates of infrastructure damage, due to winds, waves, and high water/storm surge.	Improve characterization of wind speed, durations and damage and flood extent, depth, and volume and lead to improved infrastructure and damage estimation models. The data also provides the means for development of more accurate and risk consistent building codes and standards than currently exist’
ESF #4 – Firefighting Coordinators: U.S. Forest Service, U.S. Fire Administration	Wind, rain, humidity, and other observations and forecast are useful	Seasonal forecasts and continuous monitoring of environmental conditions are needed to understand wildfire risk potential
ESF #5 – Emergency Management Coordinator: DHS/FEMA	Pre-event deployments could provide on-site data on extreme winter conditions, in addition to wind, waves, and flooding/storm surge water levels needed to estimate the spatial extent and severity of event impacts throughout the event and to better allocate resources.	Weather and water data could yield better models for predicting damages from storm events.
ESF #6 – Mass Care, Emergency Assistance, Housing, and Human Services Coordinator: DHS/FEMA	Weather and water data could be used for planning the location of and timing for set up of ESF #6 facilities.	Weather and water data could provide Preparedness and Mitigation Planning to reduce or prevent future damage by similar events

Appendix D

ESF and Coordinator	NPDI Real-time Support to ESFs	NPDI Long-term Support to ESFs
<p>ESF #7 – Logistics Management and Resource Support</p> <p>Coordinator: General Services Admin. and DHS/FEMA</p>	<p>The real-time information collected and disseminated directly supports comprehensive, national incident logistics planning, management, and sustainment capability</p>	<p>Flood inundation maps could help in determining where, and where not to store or pre-deploy equipment and supplies</p>
<p>ESF #8 – Public Health and Medical Services</p> <p>Coordinator: Dept. of Health and Human Services</p>	<p>Water and air quality information will help officials anticipate impacts on human health during hazardous weather events</p>	<p>Historical data can be useful in anticipating health impacts in future situations</p>
<p>ESF #9 – Search and Rescue</p> <p>Coordinator: DHS/FEMA</p>	<p>The real-time information collected and disseminated directly supports life-saving assistance, search and rescue operations by providing situational awareness of current conditions.</p>	<p>Historical data can be used in training exercises and for planning future operations better</p>
<p>ESF #10 – Oil and Hazardous Materials Response</p> <p>Environmental Protection Agency</p>	<p>Water level and wind speed and direction data (e.g. surface currents) collected and disseminated directly supports oil and hazardous materials (chemical, biological, radiological, etc.) response and environmental short- and long-term cleanup.</p>	<p>Hydrodynamic models and historical wind and water data can support preparedness and mitigation planning for potential future events.</p>
<p>ESF #11 – Agriculture and Natural Resources</p> <p>Coordinator: Dept. of Agriculture</p>	<p>Soil moisture and drought indices allow for short term adjustments to farm and water management routines</p>	<p>The collected and disseminated information directly supports natural resource management in addition to cultural resources and historic properties protection and restoration.</p>
<p>ESF #12 – Energy</p> <p>Coordinator: Dept. of Energy</p>	<p>Severe heat and cold temperature along with hydrologic and wind observations and forecasts ensure utility companies optimize energy production</p>	<p>Wind speed, direction, and damage data and high-water elevation and flooding data needed to characterize event strength and frequency and infrastructure performance. Such information could lead to more robust energy systems and better models of system performance during severe weather.</p>
<p>ESF #13 – Public Safety and Security</p> <p>Coordinator: Dept of Justice/Bureau of Alcohol, Tobacco, Firearms, and Explosives</p>	<p>Weather and water impact information collected and disseminated directly supports public safety and security support as well as support to access, evacuation, traffic, and crowd control.</p>	<p>Development of hazard resilient infrastructure via direct measurement of severe hazard loads directly supports public safety and security during and after events</p>

Appendix D

ESF and Coordinator	NPDIA Real-time Support to ESFs	NPDIA Long-term Support to ESFs
<p>ESF #14 – Long-Term Community Recovery</p> <p>Superseded by National Disaster Recovery Framework^b</p>	<p>Not applicable</p>	<p>Weather and water impact information collected and disseminated directly supports social and economic community impact assessments, long-term community recovery assistance to States, local governments, and the private sector as well as analysis and review of mitigation program implementation.</p>
<p>ESF #15 – External Affairs</p> <p>Coordinator: DHS</p>	<p>Weather and water impact information collected and disseminated directly supports emergency public information and protective action guidance, media and community relations, Congressional and international affairs as well as tribal and insular affairs.</p>	<p>Weather and water impact information collected and disseminated directly supports emergency public information and protective action guidance, media and community relations, Congressional and international affairs as well as tribal and insular affairs.</p>

^b The *National Disaster Recovery Framework*, published by DHS/FEMA in September 2011, is available online at http://www.fema.gov/media-library-data/20130726-1820-25045-5325/508_ndrf.pdf [December 2015].