Incident Symbology Framework, Guideline, and Operational Implementation Guidance
Version 4.0

I.   Guideline Background

Every day, police, fire fighters, 9-11 dispatchers, emergency managers, and other emergency responders use maps to plan for, mitigate against, respond to, and recover from real world incidents. It is imperative that these maps are quickly and accurately understood so that they can be used to make mission critical decisions in high stress environments. Ultimately, they aid in saving lives and changing the outcomes for survivors. Key to making maps effective decision support tools is the use of consistent symbols that are clearly understood by all to communicate critical incident information.

Additionally, maps are more routinely shared to the public by public safety agencies to inform of a current emergency or forecasted event, to deliver evacuation or shelter-in-place orders, and to alert or warn of any number of public safety concerns. Maps provided during an emergency need to be clear and indicate a call-to-action. The key to communicating effectively to the public, particularly during often stressful times, is to use consistence symbology and color schemes that communicate safety or danger and labelling to reinforce important information.

While national and international standards fulfill many symbol needs, there still exist gaps in incident symbols and the supporting frameworks. The National Alliance for Public Safety GIS (NAPSG) Foundation has been working with the U.S. Department of Homeland Security (DHS) to bridge these gaps by developing a standardized incident symbology framework, guideline, and symbol set for use at the incident level on maps, in geographic information systems (GIS), and other decision support tools. The Framework builds on best practices for delivering information clearly to first responders and the public.

NAPSG Foundation's incident symbology efforts are focused on developing and promulgating the use of a standardized national guideline that is voluntary and can be readily adopted and used since it was created by and for emergency responders. The incident symbology framework, guideline, and symbol set are intended to aid in the process of standardizing symbols used on map products during incident planning and operations. **This document is the Incident Symbology Framework and Guideline for use in developing and applying map symbols to <u>consistently communicate incident information</u>.**

II.   Standardized Color Ramp

Color Ramp Overview	A color ramp can be applied to any of the emergency hazard symbols as a secondary modifier to indicate the 1) severity of an event / risk level predicted, 2) Operational Status, or 3) Call to Action (Evacuation Zone). Color ramping should be applied consistently using the standardized RGB or HEX values outlined below. Note: Color is a secondary treatment that is not required and may not be consumable to all people. This color ramp supports standardization in the application of color for incident symbols where it is already being used as a modifier.
Severity of an event, or risk level predicted	Industry standards exist for displaying hazard or risk by the authoritative source for those hazard models or forecasts. Where there is no color ramp standard, the above ramp for severity or risk should be used which follows widely accepted conventions. Green = Good, Red or Purple = Bad or Really Bad; Yellow or Orange = Something is Happening. **Best Practice**: Less is more. Whenever possible use the Stop Light Method (Green/Yellow/Red). The additional colors should be used when necessary but can add to confusion to the public or laymen. This color ramp can be applied to any line, polygon or black and white point symbol that has an associated standard for severity or risk.

Description/Examples for Use	Color	RGB	HEX
No severity or risk	White	255,255,255	#FFFFFF
Low severity or risk	Green	0,172,58	#00AC3A
Low to medium severity or risk	Blue	35,122,207	#237ACF
Medium severity or risk	Yellow	255,215,24	#FFD718
Medium to High severity or risk; Watch Notice;	Orange	255,137,24	#FF8918
High severity or risk; Warning Notice	Red	255,24,30	#FF181E
Extreme severity or risk; Highest category possible.	Purple	237,26,252	#ED1AFC

Polygon Examples: Severity / Risk

Industry Standard	**Polygon / Areas**

National Atmospheric Release Advisory Center (NARAC) – Hazardous Release
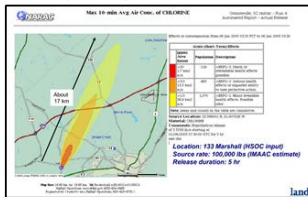
National Hurricane Center: Wind Swath
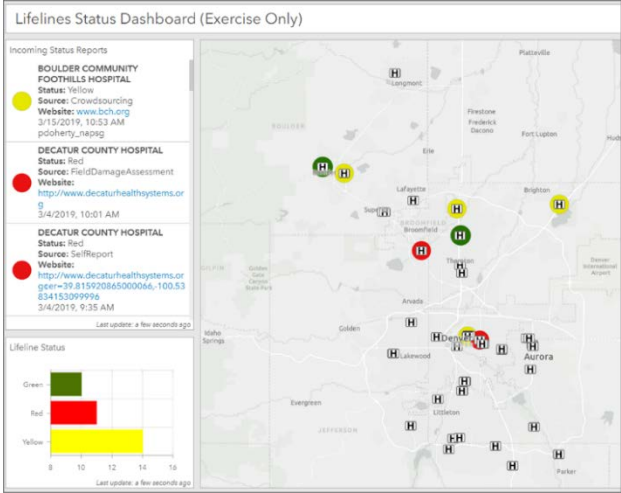
USGS: Earthquake Shake Map
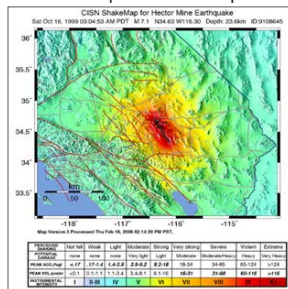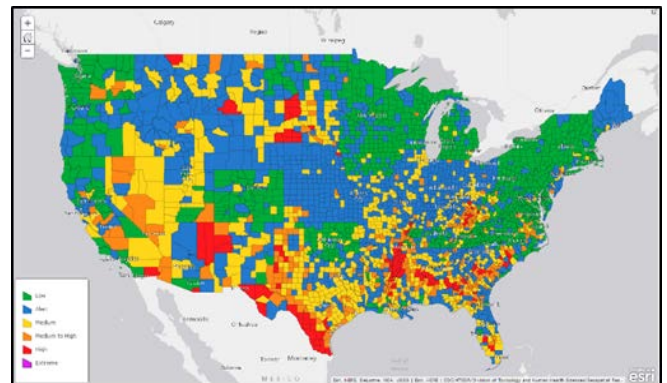
Operational Status	When displaying base data (static/non-dynamic), the standard black and white point symbols should be used. Web Maps displaying a mix of base data and live data with operational status, should use the below conventions to clearly indicate what data is purely showing location vs operational status. **Best Practice:** Applying color to should be used on black and white symbols. A halo approach is recommended for symbols with complex or with limited white space.			
	Description/Examples for Use	**Color**	**RGB**	**HEX**
	Base Data (No Operational Status Information)	White	255,255,255	#FFFFFF
	Status Unknown	Green	191,291,58	#BFBFBF
	Open Status; No damage, Stable	Green	0,172,58	#00AC3A
	Alert/Advisory; Moderate damage, Stabilizing	Yellow	255,215,24	#FFD718
	Severe Damage; Closed Status, Unstable	Red	255,24,30	#FF181E

Color Ramp Applied	**Symbol Examples**
	Halo Example: Update Community Lifeline Status (Health & Medical)

Evacuation Zones	Evacuation Zones are a call to action. Stay, Be on Alert, or Go. The stop light approach is understood by the public and calls immediate attention to areas in red. Jurisdictions may choose to only show areas in yellow or red. Regardless of the approach, a secondary method such as lables provide another mechanism to reduce confusion. Solid lines for Mandatory Orders can also help distinguish from Green zones to mitigate challenges with color blindness. **Best Practice:** If possible, use applications that take map interpretation and guess-work out of the equation (Ex: Search by address) and integrate with existing notification systems.

	Evacuation Zone Examples:
	NAPSG Evacuation Zone Template Example: Mandatory/Advisory showing only
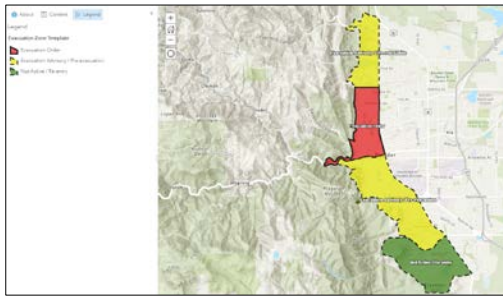
III.   Emergency Hazard Symbols

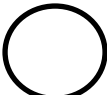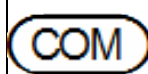| Reserved Shape 	The DIAMOND is the reserved shape for any emergency hazard symbol. The location of any hazard that may cause harm, create social disturbance, and/or inhibit access to responders and the public. Hazards should be mitigated, observed, and/or avoided. Symbols are variable other than shape. The use of text within a symbol is avoided unless it is part of a widely used standard symbol(s) that is easily understood and interpreted.		
Sub-Category	**Description**	**Symbol Examples**	
Access Hazards	Features that indicate restricted or limited access of people or vehicles.	 Blocked Access Narrow Access Restricted Weight Access	
Natural Hazards	Indicates hazards from events that naturally occur.	 Earthquake Fire Flood	
Human-Caused Threats and Hazards	Indicates threats, hazards, and events that are human-caused, either intentional or unintentional.	 Radioactive Child Abduction	
Hazardous Materials	Standard NFPA 704 and Department of Transportation HazMat Placarding.	 Acids/Corrosives NFPA 704 Explosives	
Other Specific Hazards	Other symbols used for indicating a local specific hazard.	 Fall Hazard Building Collapse Fire Load	
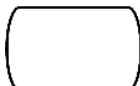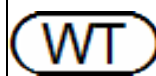
IV.   Public Alerts and Warnings

Reserved Shape	The TRIANGLE is the reserved shape for any public alert and warning symbol. Public alert and warning symbols have three primary uses:
	    1) Integrated into wireless emergency alert content to provide a complimentary visual of the evert type and/or action, as a means to optimize message content for people with disabilities and limited English proficiency
	    2) Use in public safety situational awareness applications to track where and when public alerts and warnings were issue during an event
	    3) Use in public information maps where public alerts and warnings were issued.
	Notes:
	    • Most public alert and warning symbols apply the icon used in the emergency hazard symbol to achieve consistency in communicating incident information.
	    • IPAWS live feed is publicly available for use in public safety mapping applications at: https://gii.dhs.gov/ags/rest/services/GEP/IPAWS/MapServer/0

Modifiers	The color of the triangle can be modified to indicate types of public alerts. Below is the color schematic for each alert type. The color values for each correspond to the RGB and HEX values above in section 3. Statements Watches Warnings

Sub-Category	Description	Symbol Examples	
IPAWS Event Code Alerts & Warnings	Symbols for specific IPAWS event codes for alerts and warnings.	Tornado Watch	Evacuation Immediate
Non-IPAWS Alert and Warnings	Symbols for alerts and warnings that do not have a specific corresponding IPAWS event codes and may be able to include tailored center icons.	Residential Fire	Wildland Fire

V.   Infrastructure

Infrastructure	Represents critical fixed features, fixed points of interest, critical infrastructure. Reserved shape is a rectangle with rounded corners.	Examples: • Hospital • Police Stations • Bridge • Rail Station • Pharmacies	Hospital Bridge
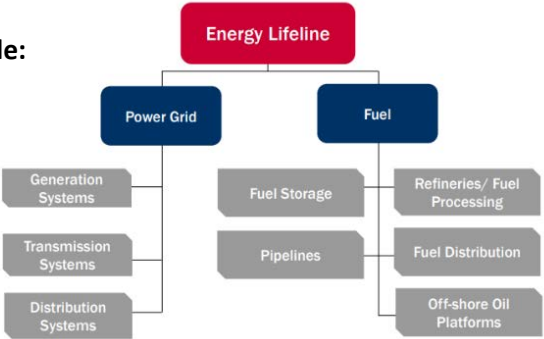
VI. Incident Symbols

The incident symbols typically consist of a clear or white background (to support being hand drawn when needed), with black outer shapes reserved for each sub-category.

Sub-Category and Reserved Shape	Description	Example Uses	Symbols Examples
Fixed Incident Resources and Command Features	Location of relatively fixed incident resources and command features that support the management of the incident.	• Incident Management Landmarks • Assembly points for responders	Ⓒ Camp Ⓑ Base ⊕ Airstrip
Incident Command System	Location of features that support the Incident Command System. These symbols are best used in dynamic maps where status information is routinely updated, but can be used in semi-static maps.	• Task Forces and Strike Teams • Groups and Divisions • Sections • Branches	FIRE Fire Branch SAR SAR Group IC Incident Commander
Resource Symbols	Symbols representing the semi-static to active location of a deployable resource, unit, or resource package.	• Ambulances • HazMat Entry Team • Emergency Medical Task Force • Incident Management Team • Urban Search and Rescue Task Force	WT Water Tender COM Communications Unit
Exposures	The side of a structure or building that is visibly impacted in an incident. Should be used to specify the precise location of an incident or impacted area.	Letters should be used to identify the visibly impacted area of a structure during an incident. "A", "B", "C", "D"	No specific examples. Use simple and clear text for indicating exposures.
Modifiers and Exceptions			
ICP	If a symbol is available in an existing standard, use it. You can modify with clear text to ease understanding.	Ⓢ Icons can be used in the background to detail specific type of feature.	CIV Arrows can be used to indicate assembly points related to the specific symbol.

VII.   Line Features

Line Shape	Description	Examples
Solid Line	A solid line indicates that the feature is active.	Full Road Closure (color/web) Full Road Closure (b/w)
Dashed Line	A dashed line indicates that the feature is planned or temporary.	Emergency Routes (Ingress/Egress) (color/web)
Icon on Line	An icon on the line indicates the type of line feature it is.	Evacuation Routes - Symbol denotes type of incident (color/web)
Arrow on Line	The arrow on the line indicates the direction the action should proceed in.	

VIII.   Community Lifelines

Lifelines	
	Lifelines describe the critical services within a community that must be stabilized or re-established—the ends—to alleviate threats to life and property. FEMA developed the Community Lifelines construct to allow for the rapid characterization of the scale and complexity of an incident and to aid decision-makers in determining the highest priorities in disaster operations. The Community Lifelines construct was formalized in the update to the National Response Framework (4th edition). The Lifelines are divided into **7 Lifelines Components (red box)**, with each component made of relevant **subcomponents (blue boxes)** for that incident. The **gray boxes** indicate the facilities (typically found in the Infrastructure Category above) and what might be mapped individually. The status of those facilities would inform the stability of the Lifeline overall. **Energy Lifeline Example:** FEMA's Community Lifeline Toolkit v2.0

Components	Subcomponents	Subcomponent Examples
Safety and Security	Law Enforcement Fire Service Search and Rescue Government Service Community Safety	Law Enforcement — Fire — Government Service
Food, Water, Shelter	Food Water Shelter Agriculture	Water — Agriculture — Shelter
Health and Medical	Medical Care Public Health Patient Movement Medical Supply Chain Fatality Management	Medical Care — Patient Movement — Public Health
Energy (Power & Fuel)	Power Grid Fuel	Power Grid — Fuel
Communications	Infrastructure Responder Communications Alerts, Warnings, and Messages Finance 911 & Dispatch	Alerts, Warnings… — 911 and Dispatch — Responder Communications
Transportation	Highway/Roadway/Motor Vehicle Mass Transit Railway Aviation Maritime	Mass Transit — Railway — Maritime
Hazardous Materials	Facilities HAZMAT, Pollutants, Contaminants	Facilities — HAZMAT, Pollutants, …
Iconology / Symbology	Lifelines, unlike traditional map symbols, were developed for use mainly as **Icons** for Senior Leadership Briefs, Situational Awareness Reports, and Dashboards. For that reason, versions were developed to allow for these varying applications and end-user needs. Label — No Label — Encased Circle — Icon "graphic" (no shape)	

Color to Indicate Incident Stabilization	
Status Grey - Unknown Red - Unstable Yellow - Stabilizing Green - Stable Blue - Base Data	The Community Lifelines color ramp follows the same guidelines listed above. Similar to the color options in the Alerts symbols that have a defined meaning (Warning vs Advisory), each of the color options are available in the Symbol Library for the Lifeline symbols with the circle shape. Color is applied to indicate the stability of a lifeline by changing halo, e.g., red to indicate 'Unstable'. **Best Practice:** Use the Circle Symbol and the appropriate color in dashboards and only on map products when no standard symbol currently exists. It is not recommended to use the label version if used as a point symbol on a map. Use the Icon in reports and dashboards, changing the background of the cell (if in a table) to show change in status.
	Examples

IX.   Pre-Incident Symbols

Pre-incident symbols are used in fire and law enforcement pre-incident planning or pre-planning in or around a specific building, facility, or other structure. Pre-incident symbols have a standardized background color to differentiate from incident symbols.

Designated Shape and Color	Sub-Category	Description	Examples		
Green	Access Point	Access point and ways to access a building or incident area	Attic Access	Knox or Key Box	Stairway
Red	Assessment Features	Alarms and other	Control Panel with Burglar Alarm Modifier	Fire Alarm Reset Panel	Public Alert alarm symbol with red triangle with blue circle
Blue	Utility Shutoffs	Location for utility shutoffs.	Fuel Shutoff	Gas Shutoff	Compressed Natural Gas Shutoff.
Gray for detector Red for fire suppression	Detection & Extinguishing Equipment	Detectors and building extinguishment systems	Dry Chemical	Duct Detector	CO2 System
Purple	Ventilation	Place to manage the exhaust of gases	Smoke Vent	HVAC System	Vent Opening
Red	Water Flow Control Valves and Water Sources	Water flow devices	Dry Chemical Reel station with NFPA Icon	Post Indicator Valve with NFPA Icon	Fire Department Connection with NFPA Icon
Gray	Equipment Rooms	Location of features	Child Care (Standard icon)	Electrical Room	Fire Pump