The National Highway Traffic Safety Administration

Next Generation 911 (NG911) Roadmap Outreach Report

911.gov

Table of Contents

Executive Summary

Reaching nationwide Next Generation 911 (NG911) is a monumental task. Some states will build NG911 at a statewide level. Others are home-rule states and do not have the authority at a statewide level to mandate or build NG911, and it must be completed at the local or regional level. Interoperability between local, state, federal, and tribal jurisdictions require coordination at a national level to encourage and provide guidance to achieve a nationwide NG911 system of systems. The *Next Generation 911 (NG911) Roadmap* (Roadmap), initially published in 2019, is a collaborative effort between the National Highway Traffic Safety Administration (NHTSA) and 911 stakeholders from both the public and private sectors. The NG911 Roadmap categorized the goals and tasks necessary to bridge the work yet to be done.

Each year, progress has been made toward the ultimate goals with the contributions of multiple organizations. The purpose of this report is to provide a progress summary report and identify the federal organizations and national associations that will lead, support, inform, or monitor progress towards the goals.

In 2022, NHTSA, which does not have the statutory authority to assign tasks to any organization, met with leading federal agencies and national organizations to review goals and tasks to achieve a nationwide NG911 system of systems, identify alignment between the task and the mission of the organization, and encourage them to take an active role in furthering the goal.

Over the course of several months, NHTSA met individually with the following agencies and organizations:

- Association of Public-Safety Communications Officials (APCO) International;
- Department of Homeland Security (DHS) Cybersecurity and Infrastructure Security Agency (CISA);
- Emergency Communications Preparedness Center (ECPC) – Federal interagency focal point for interoperable and operable communications coordination administered by DHS CISA;
- Federal Communications Commission (FCC);
- National Association of 911 Administrators (NASNA); and
- National Emergency Number Association (NENA).

During these sessions, the agency or organization discussed the tasks identified as uniquely suited to that agency or organization and their level of involvement with the task. Overall, there was strong attendance and participation during the outreach sessions. Participants agreed that this additional focus on moving the NG911 Roadmap tasks forward was a critical component of NG911 success.

NHTSA developed the roles below as a biproduct of the outreach sessions to better demonstrate where the organizations aligned to tasks based on the related work they are already performing to achieve NG911 nationwide.

Lead – This role is a lead for the task. This can involve a standards development organization (SDO) promulgating standards or an organization operating a component of NG911.

Support – This role provides direct support to the Lead organization. This can involve providing staff, knowledge, or materials to move the task forward.

Inform – This role provides information and feedback to the Lead and Support organizations.

Monitor – This role is an organization that may have other tasks related to the task and needs to be informed of the progress.

Total Number of NG911 Roadmap Tasks	Tasks Complete	Tasks in Progress	Tasks Not Started
48	5	31	12

1 Background

The *Next Generation 911 (NG911) Roadmap* (NG911 Roadmap), initially published in 2019, is a collaborative effort between the National Highway Traffic Safety Administration (NHTSA) and 911 stakeholders from both the public and private sectors. It focused on what needs to be done at the national level—by all members of the 911 community—to achieve a nationwide NG911 system of systems.

Specifically, the NG911 Roadmap identifies potential tasks in support of the following goals:

1. ***Business/Governance Goal:*** Identify strategies and resources to address policy, regulatory, governance, and funding issues or obstacles faced by jurisdictions both independently (along their transition to NG911 capabilities) and collectively (as they relate to achieving nationwide interconnectivity).
2. ***Technology (Tech) Goal:*** Stimulate adoption and enable implementation of NG911 technology by promulgating NG911 open standards and establishing means by which emerging technologies can be validated for compliance and security.
3. ***Data Goal:*** Support the enhancement of 911 services by establishing technical and operational data solutions that support cross-jurisdictional and nationwide situational awareness, interoperability, information sharing, and predictive data analysis.
4. ***Operations (Ops) Goal:*** Distinguish, enhance, and promote operating procedures, performance evaluation, and professional-development strategies that support complete and streamlined implementation of NG911 capabilities.
5. ***Cross-Cutting Goal:*** Facilitate education and knowledge transfer on an ongoing basis.

Each specific goal lists one or more potential tasks for exploring next steps toward achieving a nationwide, interconnected, interoperable NG911 system of systems. The *Next Generation 911 (NG911) Roadmap Progress Report* was developed and published in 2020, and again in 2021. There is a summary of that progress on NHTSA's website—911.gov.

The Comptroller General of the United States published a report entitled *Next Generation 911: National 911 Program Could Strengthen Efforts to Assist States*, numbered GAO-18-252 and dated January 1, 2018. The report contained three recommendations for NHTSA related to NG911:

1. Regarding the National 911 Program, the Administrator of NHTSA should develop specific program goals and performance measures related to NG911 implementation. (Recommendation 1 – closed)

2. Regarding the National 911 Program, the Administrator of NHTSA should, in collaboration with the appropriate federal agencies, determine roles and responsibilities of federal agencies participating in the National NG911 Roadmap initiative in order to carry out the national-level tasks over which each agency has jurisdiction. (Recommendation 2 – open as of September 30, 2022)
3. Regarding the National 911 Program, the Administrator of NHTSA should develop an implementation plan to support the completion of the National NG911 Roadmap's national-level tasks. (Recommendation 3 – closed)

Section 24113 of the Infrastructure Investment and Jobs Act (IIJA), Public Law 117-58, included the following requirement:

(a) NEXT GENERATION 911.—
(1) IN GENERAL.—Not later than 1 year after the date of enactment of this Act, the Secretary shall implement the recommendations of the Comptroller General of the United States contained in the report entitled "Next Generation 911: National 911 Program Could Strengthen Efforts to Assist States", numbered GAO–18–252, and dated January 1, 2018, by requiring that the Administrator of the National Highway Traffic Safety Administration, in collaboration with the appropriate Federal agencies, shall determine the roles and responsibilities of the Federal agencies participating in the initiative entitled "National NG911 Roadmap initiative" to carry out the national-level tasks with respect which each agency has jurisdiction.
(2) IMPLEMENTATION PLAN.—The Administrator of the National Highway Traffic Safety Administration shall develop An implementation plan to support the completion of national level-tasks under the National NG911 Roadmap initiative.

Given the steady influx of new technological developments, there is increased focus on the importance of achieving a nationwide NG911 environment. Since the creation of the initial NG911 Roadmap, moderate progress has been made in completing the various tasks aimed at a robust NG911 environment. In reviewing the completed tasks and those still outstanding, NHTSA determined that creating a targeted approach plan would be beneficial in recentering stakeholder focus on the overall goals. Those stakeholder entities are comprised of federal agencies, national organizations, standards bodies, and state and local agencies. NHTSA reviewed the tasks based on which stakeholder entities had an active or implied role in each task; in some cases, multiple entities were logical partners to focus on a single task.

Roles

Leads – Leading role for task
Supports – Supporting role for task
Informs – Informing role for task
Monitors – Monitoring role for task

2   Methodology

In the recent past, NHTSA provided leadership and coordination to support and promote optimal 911 services and worked closely with federal partners to coordinate federal efforts that support 911 across the nation. NHTSA does not have the authority to direct stakeholders, federal and non-federal, to work toward completion of NG911 Roadmap tasks; however, NHTSA encouraged those participants to take on, or partner with others, to address tasks. Federal partners and stakeholder entities may lack the resources and authority to directly act upon some tasks.

NHTSA initiated outreach to gauge interest in the goals of the NG911 Roadmap and scheduled a series of meetings with stakeholder partners. From March to August 2022, NHTSA conducted seven outreach meetings. The meeting participants reviewed the NG911 tasks and considered those that were within the scope of each entity, but some tasks did not fit into their current scope.

3   Findings

3.1   Emergency Communications Preparedness Center Federal 911 Working Group

The Emergency Communications Preparedness Center (ECPC) is the federal interagency focal point for interoperable and operable communications coordination. Its members represent the federal government's broad role in emergency communications, including regulation, policy, operations, grants, and technical assistance. DHS CISA is the administrator of the ECPC.

The ECPC Federal 911 Working Group is comprised of 14 federal departments and agencies:

- U.S. Department of Agriculture
- U.S. Department of Commerce
- U.S. Department of Defense
- U.S. Department of Energy
- U.S. Department of Health and Human Services
- U.S. Department of Homeland Security
- U.S. Department of the Interior
- U.S. Department of Justice
- U.S. Department of Labor
- U.S. Department of State
- U.S. Department of Transportation
- U.S. Department of Treasury
- Federal Communications Commission
- General Services Administration

On March 23, 2022, NHTSA met with ECPC NG911 Committee members. The following agencies had representatives in attendance:

- Cybersecurity and Infrastructure Security Agency (CISA)
- Defense Information Systems Agency (DISA)
- Department of Defense (DOD)
- Federal Communications Commission (FCC)
- National Institute of Justice (NIJ)
- National Telecommunications and Information Administration (NTIA)
- United States Coast Guard (USCG)
- United States Marine Corps (USMC)

These members expressed interest in the various tasks but as a group communicated that they were interested in observing the status of the technical goals shown below.

NG911 Roadmap Tasks	Role
Tech[1] 1. Design, implement, and operate nationwide interconnected ESInets[2].	Monitor
Tech 2. Design, implement, and operate a national forest guide.	Monitor
Tech 4. Design, implement, and operate a nationwide GIS[3] data store.	Monitor
Tech 5. Design, implement, and operate a nationwide ICAM[4] capability.	Monitor
Tech 6. Design, implement, and operate a nationwide cybersecurity capability, such as Emergency Communications Cybersecurity Center (EC3).	Monitor
Tech 8. Develop minimum standards and requirements for network interconnection and impacts on facility and personnel security.	Monitor
Tech 9. Develop a strategy for expanding the connection between national Information Sharing Analysis Centers (ISACs) and PSAPs[5] to augment nationwide NG911 security.	Monitor
Tech 10. Define technical requirements and successes for carrier migration and interconnection using industry standards.	Monitor
Tech 11. Develop policies that promote accelerated migration to NG911 by carriers and PSAPs.	Monitor
Tech 12. Develop minimum requirements that technologies must meet to verify overall legitimacy of 911 service delivery and impact to the 911 ecosystem (e.g., workforce needs, cybersecurity risks).	Monitor
Tech 13. Develop standards and requirements for NG911 system testing and evaluation, including external systems that interact with NG911 functions (e.g., FirstNet, alarm systems, telematics devices).	Monitor
Tech 14. Research the feasibility—including cost implications and funding considerations—of establishing sanctioned testing facilities to enable focused, safe evaluation of NG911 products and emerging technologies.	Monitor
Tech 15. Research the feasibility—including cost implications and funding considerations—of establishing a credentialing authority for NG911 compliance.	Monitor

3.2   Cybersecurity and Infrastructure Security Agency

On July 22, 2022, NHTSA met with CISA. NHTSA reviewed the background of the Roadmap tasks and intended outcomes from the meeting with the attendees. CISA identified a list of tasks it believed aligned with its mission, including adopting the NG911 Roadmap cyber elements as the pillar of their Cyber Resilient 911 program.[6]

---

[1] Technology
[2] Emergency Services Internet Protocol (IP) networks
[3] Geographic information system
[4] Identity, Credential, and Access Management
[5] Public safety answering points
[6] https://docs.house.gov/billsthisweek/20220307/BILLS-117RCP35-JES-DIVISION-F.pdf

CISA volunteered to lead multiple goals from the cybersecurity standpoint, while also supporting, informing, and monitoring other tasks.

NG911 Roadmap Tasks	Role
Business 6. Develop a strategy for developing public policies that support implementation and proper use of nationwide products.	Lead Inform
Business 7. Develop an outreach and stakeholder engagement plan to explore feasible ownership and sustainable funding models.	Lead Inform
Business 8. Identify sources of funding for the development, implementation, operation, and support of required nationwide components.	Lead Inform
Business 10. Identify long-term jurisdictional funding streams, including traditional and non-traditional sources (e.g., public-private partnerships).	Inform
Business 11. Develop an inventory of jurisdictional NG911 roadmaps/plans.	Inform
Business 12. Develop an analysis report on jurisdictional accomplishments regarding cross-boundary interconnectivity and identify how approaches can be scaled nationwide.	Inform
Business 13. Continue to develop case studies regarding how issues identified have been resolved at jurisdictional and federal levels.	Inform
Business 14. Develop NG911 policies that address parameters for nationwide interconnectivity of jurisdictional 911 systems.	Inform
Tech 5. Design, implement, and operate a nationwide ICAM capability.	Lead Inform
Tech 6. Design, implement, and operate a nationwide cybersecurity capability, such as Emergency Communications Cybersecurity Center (EC3).	Lead
Tech 9. Develop a strategy for expanding the connection between national Information Sharing Analysis Centers (ISACs) and PSAPs to augment nationwide NG911 security.	Lead
Tech 12. Develop minimum requirements that technologies must meet to verify overall legitimacy of 911 service delivery and impact to the 911 ecosystem (e.g., workforce needs, cybersecurity risks).	Lead
Ops[7] 3. Create best practices for NOC[8] and SOC[9] notifications.	Monitor
Ops 5. Identify necessary training (e.g., cross-jurisdictional call handling) and professional development needed to bolster the skills and growth paths of those currently in the workforce, as well as opportunities to integrate NG911 education for those who are interested in 911 as a career.	Lead

---

[7] Operations
[8] Network operations center
[9] Security operations center

3.3   Federal Communications Commission

On June 6, 2022, NHTSA met with the FCC to discuss the NG911 Roadmap tasks. The FCC stated during the meeting, by nature of its mission, that it is permitted to work on tasks identified for it by law; however, it is not permitted to comment on activity currently pending or anticipated in the future. Following the meeting, NHTSA provided the FCC attendees the NG911 Roadmap progress report, and they responded with comments.

Since the February 2021 NG911 Roadmap update, the FCC has completed aspects of business goals associated with the identification of acceptable uses of 911 funding. The FCC has adopted rules defining fee diversion for purposes of Section 902.[10] The FCC rules defining fee diversion require compliance as of June 22, 2022. These rules are codified at 47 CFR Part 9, Subpart I. Those rules should now be adopted at the state and local level. National Association of 911 Administrators (NASNA) will continue to monitor and support states as they update their statutes to align with the rules.

Based on information provided by the FCC, it will continue to lead, support, inform, and monitor goals that align with its responsibilities and authority:

NG911 Roadmap Tasks	Role
Business 1. Concretely define what constitutes eligible spending of 911 funds.	Support Inform
Business 2. Identify financial inefficiencies and other issues regarding current spending approaches.	Inform
Business 3. Develop a nationally accepted definition of the term, "fee diversion."	Lead Inform
Business 4. Develop an adequate and sustainable jurisdictional financial model that includes clear funding and spending guidelines.	Inform
Business 5. Develop a comprehensive cost analysis for nationwide products in need of development, testing, implementation, adoption, operations, and maintenance.	Inform
Business 11. Develop an inventory of jurisdictional NG911 roadmaps/plans.	Inform
Tech 3. Design, implement, and operate a nationwide PSAP registry.	Inform
Tech 9. Develop a strategy for expanding the connection between national Information Sharing Analysis Centers (ISACs) and PSAPs to augment nationwide NG911 security.	Inform
Tech 10. Define technical requirements and successes for carrier migration and interconnection using industry standards.	Inform
Tech 11. Develop policies that promote accelerated migration to NG911 by carriers and PSAPs.	Inform

---

[10] Consolidated Appropriations Act, 2021, Public Law 116-260, Division FF, Title IX, Section 902, Don't Break Up the T-Band Act of 2020 (Section 902); https://www.govinfo.gov/content/pkg/FR-2022-06-22/pdf/2022-13230.pdf

NG911 Roadmap Tasks	Role
Ops 1. Develop best practices based on how states have overcome cross-jurisdictional issues (e.g., call routing, liability).	Inform
Ops 2. Develop best practices and/or national standards for operations within the NG911 environment.	Inform
Ops 3. Create best practices for NOC and SOC notifications.	Monitor
Cross-Goal[11] 1. Conduct a feasibility study, including cost implications and funding considerations, regarding creation of a national database/repository that houses and makes accessible guidance materials, research, and other resources that are relevant to the entire NG911 spectrum.	Inform

3.4   National Highway Traffic Safety Administration

On July 19, 2022, NHTSA reviewed its own role within the NG911 Roadmap tasks and determined that the agency would need to review and re-evaluate because the agency's broader 911 authorities expired on September 30, 2022.

3.5   National Association of State 911 Administrators

On August 2, 2022, NHTSA met with NASNA members to conduct a thorough review of tasks that may align with NASNA's mission. NASNA agreed to lead or support goals associated with costs for NG911, gathering NG911 state plans, funding of nationwide NG911 resources needed for interoperability, and developing best practices for cross-jurisdictional issues associated with NG911 systems.

NG911 Roadmap Tasks	Role
Business 1. Concretely define what constitutes eligible spending of 911 funds.	Lead
Business 2. Identify financial inefficiencies and other issues regarding current spending approaches.	Lead
Business 3. Develop a nationally accepted definition of the term, "fee diversion."	Support
Business 4. Develop an adequate and sustainable jurisdictional financial model that includes clear funding and spending guidelines.	Lead
Business 5. Develop a comprehensive cost analysis for nationwide products in need of development, testing, implementation, adoption, operations, and maintenance.	Inform
Business 8. Identify sources of funding for the development, implementation, operation, and support of required nationwide components.	Inform
Business 9. Maintain a funding stream for the NG911 grant program.	Inform

---

[11] Cross-Cutting Goal

NG911 Roadmap Tasks	Role
Business 10. Identify long-term jurisdictional funding streams, including traditional and non-traditional sources (e.g., public-private partnerships).	Inform
Business 11. Develop an inventory of jurisdictional NG911 roadmaps/plans.	Lead
Business 12. Develop an analysis report on jurisdictional accomplishments regarding cross-boundary interconnectivity and identify how approaches can be scaled nationwide.	Support
Tech 8. Develop minimum standards and requirements for network interconnection and impacts on facility and personnel security.	Lead
Tech 10. Define technical requirements and successes for carrier migration and interconnection using industry standards.	Lead
Tech 13. Develop standards and requirements for NG911 system testing and evaluation, including external systems that interact with NG911 functions (e.g., FirstNet, alarm systems, telematics devices).	Lead Support
Tech 14. Research the feasibility—including cost implications and funding considerations—of establishing sanctioned testing facilities to enable focused, safe evaluation of NG911 products and emerging technologies.	Lead Support
Ops 1. Develop best practices based on how states have overcome cross-jurisdictional issues (e.g., call routing, liability).	Support
Ops 8. Evaluate the best nationwide approaches for collecting performance-related data.	Support
Ops 10. Develop best practices for applying national models at the jurisdictional level.	Lead
Cross-Goal 1. Conduct a feasibility study, including cost implications and funding considerations, regarding creation of a national database/repository that houses and makes accessible guidance materials, research, and other resources that are relevant to the entire NG911 spectrum.	Inform

3.6 Association of Public-Safety Communications Officials International

On August 29, 2022, NHTSA met with the Association of Public-Safety Communications Officials (APCO) International. The members expressed interest in the various tasks and provided feedback on where their past and current efforts aligned to support NG911 Roadmap goals. Currently APCO supports or informs the tasks shown below.

NG911 Roadmap Tasks	Role
Business 2. Identify financial inefficiencies and other issues regarding current spending approaches.	Support
Business 6. Develop a strategy for developing public policies that support implementation and proper use of nationwide products.	Inform
Business 9. Maintain a funding stream for the NG911 grant program.	Support

NG911 Roadmap Tasks	Role
Tech 5. Design, implement, and operate a nationwide ICAM capability.	Inform
Tech 6. Design, implement, and operate a nationwide cybersecurity capability, such as Emergency Communications Cybersecurity Center (EC3).	Inform
Tech 8. Develop minimum standards and requirements for network interconnection and impacts on facility and personnel security.	Inform
Tech 12. Develop minimum requirements that technologies must meet to verify overall legitimacy of 911 service delivery and impact to the 911 ecosystem (e.g., workforce needs, cybersecurity risks).	Inform
Tech 13. Develop standards and requirements for NG911 system testing and evaluation, including external systems that interact with NG911 functions (e.g., FirstNet, alarm systems, telematics devices).	Inform
Data 2a. Develop NG911-related data models and requirements relevant to the entire lifecycle of 911 call handling and response (as sanctioned by the 911 community).	Support
Data 2b. Develop NG911-related standards relevant to the entire lifecycle of 911 call handling and response (as sanctioned by the 911 community).	Support
Data 5. Develop an inventory of existing policies relevant to geospatial routing of 911 calls (regardless of technology used).	Support
Data 6. Develop needed standards, requirements, and best practices for NG911 consumption and handling of GIS data.	Support
Data 7. Research the feasibility—including cost implications and funding considerations—of establishing a national map that can be accessed by all PSAPs.	Support
Data 8. Gap analysis of the hurdles to seamless GIS data for nationwide 911 call routing.	Support
Ops 2. Develop best practices and/or national standards for operations within the NG911 environment.	Support Inform
Ops 4. Develop NG911-appropriate job descriptions (e.g., operational, systems management, GIS).	Inform
Ops 5. Identify necessary training (e.g., cross-jurisdictional call handling) and professional development needed to bolster the skills and growth paths of those currently in the workforce, as well as opportunities to integrate NG911 education for those who are interested in 911 as a career.	Support Inform
Ops 8. Evaluate the best nationwide approaches for collecting performance-related data.	Inform
Ops 9. Develop national models for performance analysis and evaluation.	Support
Ops 10. Develop best practices for applying national models at the jurisdictional level.	Inform

3.7   National Emergency Number Association

On July 22, 2022, NHTSA met with National Emergency Number Association (NENA) staff. Following the meeting, NHTSA provided NENA attendees with the NG911 Roadmap progress report, and the attendees responded with tasks that they are prepared to take on in addition to ongoing tasks.

NENA is leading, supporting, or informing business, technical, data, and operational goals associated with costs for NG911, gathering NG911 state plans, funding of nationwide NG911 resources needed for interoperability, and developing best practices for cross-jurisdictional issues associated with NG911 systems.

NG911 Roadmap Tasks	Role
Business 2. Identify financial inefficiencies and other issues regarding current spending approaches.	Lead
Business 9. Maintain a funding stream for the NG911 grant program.	Support
Tech 1. Design, implement, and operate nationwide interconnected ESInets.	Inform
Tech 2. Design, implement, and operate a national forest guide.	Inform
Tech 3. Design, implement, and operate a nationwide PSAP registry.	Lead
Tech 5. Design, implement, and operate a nationwide ICAM capability.	Inform
Tech 8. Develop minimum standards and requirements for network interconnection and impacts on facility and personnel security.	Lead
Tech 12. Develop minimum requirements that technologies must meet to verify overall legitimacy of 911 service delivery and impact to the 911 ecosystem (e.g., workforce needs, cybersecurity risks).	Inform
Tech 13. Develop standards and requirements for NG911 system testing and evaluation, including external systems that interact with NG911 functions (e.g., FirstNet, alarm systems, telematics devices).	Lead Inform
Tech 14. Research the feasibility—including cost implications and funding considerations—of establishing sanctioned testing facilities to enable focused, safe evaluation of NG911 products and emerging technologies.	Lead
Tech 15. Research the feasibility—including cost implications and funding considerations—of establishing a credentialing authority for NG911 compliance.	Inform
Data 1. Address recommendations that surface as a result of NHTSA's Strategic Planning for Collection and Use of Nationwide 911 Data Project.	Support
Data 2a. Develop NG911-related data models and requirements relevant to the entire lifecycle of 911 call handling and response (as sanctioned by the 911 community).	Lead Inform
Data 2b. Develop NG911-related standards relevant to the entire lifecycle of 911 call handling and response (as sanctioned by the 911 community).	Lead Inform

NG911 Roadmap Tasks	Role
Data 3. Assess successful national and international efforts, and develop pilot projects to test the integration, use, and aggregation of additional data and multimedia (e.g., images, real-time text, social media, videos).	Support
Data 5. Develop an inventory of existing policies relevant to geospatial routing of 911 calls (regardless of technology used).	Lead Inform
Data 6. Develop needed standards, requirements, and best practices for NG911 consumption and handling of GIS data.	Lead Inform
Data 7. Research the feasibility—including cost implications and funding considerations—of establishing a national map that can be accessed by all PSAPs.	Lead Inform
Data 8. Gap analysis of the hurdles to seamless GIS data for nationwide 911 call routing.	Lead
Ops 1. Develop best practices based on how states have overcome cross-jurisdictional issues (e.g., call routing, liability).	Inform
Ops 2. Develop best practices and/or national standards for operations within the NG911 environment.	Lead Inform
Ops 3. Create best practices for NOC and SOC notifications.	Inform
Ops 4. Develop NG911-appropriate job descriptions (e.g., operational, systems management, GIS).	Inform
Ops 5. Identify necessary training (e.g., cross-jurisdictional call handling) and professional development needed to bolster the skills and growth paths of those currently in the workforce, as well as opportunities to integrate NG911 education for those who are interested in 911 as a career.	Support Inform
Ops 6. Assess successful national and international interconnectivity with OGAs and develop pilot projects and demonstrations to identify needs and best practices related to the various nontraditional domains, disciplines, and entities that either require interconnectivity or would benefit from a more direct level of access to 911 services.	Inform
Ops 7. Develop guidelines and procedures for interconnecting with nontraditional entities.	Inform
Ops 8. Evaluate the best nationwide approaches for collecting performance-related data.	Inform
Ops 9. Develop national models for performance analysis and evaluation.	Support
Ops 10. Develop best practices for applying national models at the jurisdictional level.	Inform

4   Actions

NHTSA has been tracking the progress of NG911 Roadmap tasks since 2019.

The total number of tasks on the NG911 Roadmap is currently 48. To date, five tasks have been completed with 31 tasks in progress and 12 not yet started.

Total Number of NG911 Roadmap Tasks	Tasks Complete	Tasks in Progress	Tasks Not Started
48	10%	65%	25%

As of August 2, 2022, 30 of the 48 tasks have been taken on by non-government stakeholders and/or government entities as a result of the coordinated efforts in the outreach meetings. NHTSA and outreach meeting participants identified and categorized tasks based on the task's alignment with an entity's respective mission and vision.

In the following pages, each task is categorized by the progress that has been made.

Green	Tasks that are complete.
Yellow	Tasks that are in progress. These tasks have components of the task that have been completed or in progress, but the task as a whole is underway and not completed.
Red	Tasks that have not begun. These tasks may have some actions tangential to the task that is in progress but not progress on the task itself. For some tasks, work has begun that will inform this task. In some cases, the tasks are dependent on completion of other tasks, or it is not yet time appropriate. Some of these tasks have organizations identified to lead or support, but they have not been started due to scheduling or other tasks taking precedence.

Task	Lead	Support	Inform	Monitor
Business 1. Concretely define what constitutes eligible spending of 911 funds.	NASNA	FCC	FCC	
Business 2. Identify financial inefficiencies and other issues regarding current spending approaches.	NASNA NENA	APCO	FCC	
Business 3. Develop a nationally accepted definition of the term, "fee diversion."	FCC	NASNA	FCC	
Business 4. Develop an adequate and sustainable jurisdictional financial model that includes clear funding and spending guidelines.	NASNA		FCC NASNA	
Business 5. Develop a comprehensive cost analysis for nationwide products in need of development, testing, implementation, adoption, operations, and maintenance.	NHTSA NTIA		FCC NASNA	
Business 6. Develop a strategy for developing public policies that support implementation and proper use of nationwide products.	CISA		APCO CISA	
Business 7. Develop an outreach and stakeholder engagement plan to explore feasible ownership and sustainable funding models.	CISA		CISA	
Business 8. Identify sources of funding for the development, implementation, operation, and support of required nationwide components.	CISA		CISA NASNA	
Business 9. Maintain a funding stream for the NG911 grant program.		APCO NASNA NENA	NASNA	
Business 10. Identify long-term jurisdictional funding streams, including traditional and non-traditional sources (e.g., public-private partnerships).			CISA NASNA	

Task	Lead	Support	Inform	Monitor
Business 11. Develop an inventory of jurisdictional NG911 roadmaps/plans.	NASNA		CISA FCC	
Business 12. Develop an analysis report on jurisdictional accomplishments regarding cross-boundary interconnectivity and identify how approaches can be scaled nationwide.		NASNA	CISA	
Business 13. Continue to develop case studies regarding how issues identified have been resolved at jurisdictional and federal levels.			CISA	
Business 14. Develop NG911 policies that address parameters for nationwide interconnectivity of jurisdictional 911 systems.			CISA	
Tech 1. Design, implement, and operate nationwide interconnected ESInets.			NENA	ECPC
Tech 2. Design, implement, and operate a national forest guide.	NENA (NIOC)		NENA	ECPC
Tech 3. Design, implement, and operate a nationwide PSAP registry.	NENA		FCC NENA	
Tech 4. Design, implement, and operate a nationwide GIS data store.			NENA	ECPC
Tech 5. Design, implement, and operate a nationwide ICAM capability.	NENA (NIOC) CISA		APCO CISA FCC NENA	ECPC
Tech 6. Design, implement, and operate a nationwide cybersecurity capability, such as Emergency Communications Cybersecurity Center (EC3).	CISA		APCO FCC	ECPC
Tech 7. Develop a research report on the need for, and feasibility of, a nationwide cybersecurity and cyberthreat response framework.	NIST[12]		NIST	

---

[12] https://www.nist.gov/cyberframework/framework

Task	Lead	Support	Inform	Monitor
Tech 8. Develop minimum standards and requirements for network interconnection and impacts on facility and personnel security.	NASNA NENA	NIOC	APCO NENA	ECPC
Tech 9. Develop a strategy for expanding the connection between national Information Sharing Analysis Centers (ISACs) and PSAPs to augment nationwide NG911 security.	CISA		FCC	ECPC
Tech 10. Define technical requirements and successes for carrier migration and interconnection using industry standards.	NASNA	FCC	FCC	ECPC
Tech 11. Develop policies that promote accelerated migration to NG911 by carriers and PSAPs.			FCC	ECPC
Tech 12. Develop minimum requirements that technologies must meet to verify overall legitimacy of 911 service delivery and impact to the 911 ecosystem (e.g., workforce needs, cybersecurity risks).	CISA		APCO NENA	ECPC
Tech 13. Develop standards and requirements for NG911 system testing and evaluation, including external systems that interact with NG911 functions (e.g., FirstNet, alarm systems, telematics devices).	NASNA NENA	NASNA	APCO NENA	ECPC
Tech 14. Research the feasibility—including cost implications and funding considerations—of establishing sanctioned testing facilities to enable focused, safe evaluation of NG911 products and emerging technologies.	NASNA NENA	NASNA		ECPC
Tech 15. Research the feasibility—including cost implications and funding considerations—of establishing a credentialing authority for NG911 compliance.	NIOC		NENA	
Data 1. Address recommendations that surface as a result of NHTSA's		NENA		

Task	Lead	Support	Inform	Monitor
Strategic Planning for Collection and Use of Nationwide 911 Data Project.				
Data 2a. Develop NG911-related data models and requirements relevant to the entire lifecycle of 911 call handling and response (as sanctioned by the 911 community).	NENA	APCO	NENA	
Data 2b. Develop NG911-related standards relevant to the entire lifecycle of 911 call handling and response (as sanctioned by the 911 community).	NENA	APCO	APCO NENA	
Data 3. Assess successful national and international efforts, and develop pilot projects to test the integration, use, and aggregation of additional data and multimedia (e.g., images, real-time text, social media, videos).		NENA		
Data 4. Assess successful national and international integration with other governmental agencies (OGAs) and develop pilot projects to test NG911 integration with Smart City initiatives and Internet of Things (IoT) systems.				
Data 5. Develop an inventory of existing policies relevant to geospatial routing of 911 calls (regardless of technology used).	NENA	APCO	NENA	
Data 6. Develop needed standards, requirements, and best practices for NG911 consumption and handling of GIS data.	NENA	APCO	NENA	
Data 7. Research the feasibility—including cost implications and funding considerations—of establishing a national map that can be accessed by all PSAPs.	NENA	APCO	NENA	
Data 8. Gap analysis of the hurdles to seamless GIS data for nationwide 911 call routing.	NENA	APCO		

Task	Lead	Support	Inform	Monitor
Ops 1. Develop best practices based on how states have overcome cross-jurisdictional issues (e.g., call routing, liability).		NASNA	FCC NENA	
Ops 2. Develop best practices and/or national standards for operations within the NG911 environment.	NENA	APCO	APCO FCC NENA	
Ops 3. Create best practices for NOC and SOC notifications.			FCC NENA	CISA
Ops 4. Develop NG911-appropriate job descriptions (e.g., operational, systems management, GIS).			APCO NENA	NHTSA
Ops 5. Identify necessary training (e.g., cross-jurisdictional call handling) and professional development needed to bolster the skills and growth paths of those currently in the workforce, as well as opportunities to integrate NG911 education for those who are interested in 911 as a career.	CISA	APCO NENA	APCO NENA	NHTSA
Ops 6. Assess successful national and international interconnectivity with OGAs and develop pilot projects and demonstrations to identify needs and best practices related to the various nontraditional domains, disciplines, and entities that either require interconnectivity or would benefit from a more direct level of access to 911 services.			NENA	
Ops 7. Develop guidelines and procedures for interconnecting with nontraditional entities.			NENA	
Ops 8. Evaluate the best nationwide approaches for collecting performance-related data.		NASNA	APCO NENA	
Ops 9. Develop national models for performance analysis and evaluation.		APCO NENA		
Ops 10. Develop best practices for applying national models at the jurisdictional level.	NASNA		APCO NENA	

Task	Lead	Support	Inform	Monitor
Cross-Goal 1. Conduct a feasibility study, including cost implications and funding considerations, regarding creation of a national database/repository that houses and makes accessible guidance materials, research, and other resources that are relevant to the entire NG911 spectrum.			FCC NASNA	

5 Conclusion

Achieving nationwide NG911 is a critically important milestone for public safety communications and will require a great deal more work, but progress continues to be made. The technical capabilities of NG911—bringing lifesaving and timesaving tools to the nation's PSAPs—will benefit the public as well as the first responder community. The capabilities to enhance interoperability across all jurisdictions require the coordination of federal and non-federal partners. While much progress has been recognized, continued collaboration will ensure that a nationwide NG911 system of systems becomes a reality.