



Bylaws of the NG9-1-1 Interoperability Oversight Commission

Approved by the NG9-1-1 Interoperability Oversight Commission September 14, 2022

and Adopted by the NENA Board of Directors September 21, 2022

Article 1: Name

- A. The name of this commission is the NG9-1-1 Interoperability Oversight Commission (“Commission”) established by the National Emergency Number Association (“NENA,” or “Association”), a 501(c)(3) non-stock corporation chartered in the state of Wisconsin, by its Board of Directors (“Board”).

Article 2: Background

- A. The NENA i3 family of standards for NG9-1-1 (“i3 Family”) require that certain services (“Interoperability Services”) be established in order to provide baseline interoperability for NG9-1-1 systems in the United States, Canada, and beyond.
- B. These services include the establishment of a root of trust for NG9-1-1 and a Forest Guide, as specified in the i3 Family, as well as the establishment of a conformance test program.

Section 1: Root of Trust

- A. Best convention in modern web services and telecommunications demands secure communications over Transport Layer Security (TLS). TLS requires the sharing of security certificates issued by a shared root of trust. Over the general internet, several reputable Certificate Authorities (CAs) operate as shared roots of trust within the general public trust framework.
- B. Critical Infrastructure (CI) industries and other fields with special security requirements, such as public safety and military, will routinely establish a shared Public Key Infrastructure (PKI) independent of the general trust framework for the internet, with a shared root of trust specific to that industry. The rationale for these industry-specific PKIs is to establish trust within a specific industry and for special purposes. NG9-1-1 is one such field.
- C. The i3 Family requires shared root of trust specific to NG9-1-1. This is the PSAP Credentialing Agency (PCA). The PCA enables an entity and its functional elements to initiate communications with another entity and its functional elements using a certificate that identifies it as a verified 9-1-1 entity when establishing a connection. The PCA allows for and promotes interoperability by enabling a querier to establish a secure connection with any other entity in the NG9-1-1 ecosystem using its credentials that

- mark it as a known and validated 9-1-1 entity. This secure connection can also be established with special privileges provided only to 9-1-1 entities because it shares the root of trust for NG9-1-1. It is safe for an entity to provide these special privileges to even a completely unknown entity if both share the same root of trust exclusive to NG9-1-1, because only legitimate 9-1-1 entities will have a certificate with credentials traceable to the PCA.
- D. The i3 Family requires that the PCA be established and that credentials throughout the NG9-1-1 ecosystem are traceable to the PCA. Without PCA deployment, no NG9-1-1 deployment can be fully conformant with standards.
 - E. Without a shared root of trust, NG9-1-1 cannot achieve universal, interoperable, secure communications, as it is not feasible for every jurisdiction to independently establish trust with every other jurisdiction.
 - F. Infrastructure owners must leverage PKI according to best practices and possess root certificates that are managed at a much higher level of security than most certificate-owning entities; accordingly, every NG9-1-1 deployment will have to contend with highly secure certificates. For interoperability purposes, the i3 Family specifies that all certificates for NG9-1-1 be traceable to the same entity.
 - G. The PCA shall be operated as a world-class root CA, and will require funds to sustain its operation, which will be assessed on entities that establish a position on the chain of trust for NG9-1-1. This is normal practice in cybersecurity; any web service operator pays a fee to purchase a security certificate from a root CA provider or a fee to operate an intermediate CA that has trust established by a reputable root CA or other intermediate CA closer to the root CA in the chain of trust.
 - H. Accordingly, the PCA does not necessarily impose a new cost category on NG9-1-1 providers, because providers would otherwise incur cost in acquiring or generating certificates. However, i3 does require that their security certificate is traceable to the PCA.
 - I. The PCA must be administered by a neutral party. NENA, under oversight by the Commission, is hereby acknowledged as this neutral party for the PCA for the United States, and potentially beyond.

Section 2: The Forest Guide

- A. In NG9-1-1, emergency call routing is managed by rules and in normal cases determined by the location of the caller. This is called Location-to-Service Translation (LoST). A LoST server performs this location-based routing function.
- B. The Forest Guide is a LoST server that contains routing information for NG9-1-1 systems. The i3 Family requires the existence of a top-level LoST server, which is described in the i3 Standard for Next-Generation 9-1-1 as the United States Forest Guide (“Forest Guide”). The United States Forest Guide will contain routing information for every NG9-1-1 system in the U.S., as well as routing information for other Forest Guides, such as a

- Canadian or other non-U.S. entity Forest Guide(s). The Forest Guide is an implementation of IETF RFC 5582.
- C. The Forest Guide does not contain routing information for individual answering points; however, it will provide information for queries to find the correct LoST server that finds the answering point that serves that location.
 - D. The Forest Guide is queried recursively. In NG9-1-1, this occurs when a query to the Emergency Call Routing Function (ECRF)/Location Validation Function (LVF) lacks service information for a given location. The ECRF/LVF will then query the Forest Guide to determine whether it can identify the appropriate ECRF/LVF for routing at that location.
 - E. In most cases, neighboring jurisdictions should provision routing information for each other, and queries will not recur to the Forest Guide. The Forest Guide provides for interoperability in cases where such prior coordination has not occurred; for example, jurisdictions geographically far apart or in neighboring countries.
 - F. In limited cases, the Forest Guide may also be consulted for service discovery; for example, initial provisioning of an originating service provider external ECRF, so that it may populate and sync the routing data an NG9-1-1 system will use to route a call.
 - G. In general, the Forest Guide will not be consulted as the initial target for a LoST query; queries should arrive at the Forest Guide through recursion. The Forest Guide is to be used for interoperability; it is not intended to be the initial routing element for live emergency calls.
 - H. There should be one Forest Guide for each larger coverage region, such as a federation of states or subcontinent.
 - I. Each Forest Guide must be administered by a neutral party. NENA, under oversight by the Commission, is hereby acknowledged as this neutral party for the Forest Guide for the United States, and potentially beyond.

Section 3: Establishment of the Commission

- A. NENA, at the direction of its standards development community, including the NENA Development Steering Council (DSC), 9-1-1 Core Services Committee, and the Board, has or will execute an open and competitive Requests for Proposal (RFP) to establish the Interoperability Services.
- B. NENA and its selected vendor have developed (or will develop) a set of policies for the Services, which will be presented to the Commission for consideration.
- C. The Services shall be operated without profit motive for NENA.
- D. Because the Services are part of the critical infrastructure chain for NG9-1-1, and because operating the Services requires investment by NENA and its stakeholders, the Services require independent oversight by affected stakeholders. This oversight is the responsibility of the Commission.
- E. The i3 Family may require that additional functional elements be established by a neutral third party and governed in a similar manner. It is assumed that the Commission



shall oversee implementation and governance of these elements as they are introduced. These bylaws will be updated according to such increased scope over time.

Article 3: Purpose

- A. The Commission shall oversee:
 - a. The PCA;
 - b. Forest Guide;
 - c. Any additional NG9-1-1 Interoperability Services that arise in the future;
 - d. NENA's administration of Services contracts, including direct management of the vendor(s) and related accounting and expense management;
 - e. Financially sustainable operation of the Services, including reasonable fee schedules;
 - f. The Services' not-for-profit mandate;
 - g. Licensing of one or more certification marks related to conformance with the i3 Family and/or integration with interoperability services overseen by the Commission;
 - h. Development of tools for Conformance testing and establishment of an NG9-1-1 Conformance Test program;
 - i. Initial passage, maintenance, and update of policies such as the PCA Certificate Policy (CP) and, when necessary, enforcement of those policies; and
 - j. Administration of the Services performed by staff employed by NENA ("The Office").
- B. The Commission shall deliver or delegate the delivery of regular reports of deployment and management of the Services to the Board and/or NENA Membership.

Article 4: Commission Membership

Section 1: Members

Subsection 1: Membership

The Commission's membership shall be representative of 9-1-1's needs and interests, including stakeholder entities that are involved with the PKI for NG9-1-1.

These members shall include the following, their successor, or their delegate:

- A. The NENA chief executive officer ("CEO") (non-voting)
- B. The president of the Board ("President")
- C. One member from the NENA Development Steering Council ("DSC member")
- D. One member from the NENA 9-1-1 Core Services Committee ("CSC member")
- E. One member representing a U.S. state, provincial, or national non-U.S. 9-1-1 authority with responsibility for operating an NG9-1-1 network ("State Member")
- F. One member representing local or regional 9-1-1 authorities with responsibility for operating an NG9-1-1 network within a region smaller than

a US state or province, such as a county, metropolitan area or a council of governments (“Local Member”)

- G. One member representing commercial providers of NG9-1-1 core services (“Core Services Member”)
- H. One member representing commercial providers of NG9-1-1 end-user products (“Product Member”)
- I. One member representing organizations with a direct responsibility for handling 9-1-1 emergency calls (“PSAP Member”)
- J. One member representing elected officials who does not represent a public safety agency, with oversight of 9-1-1 services (“Elected Member”)
- K. One member representing public safety associations not otherwise represented (“Association Member”)
- L. One member representing the United States National 911 Program (“Federal Member”) (advisory/non-voting)
- M. One member representing the United States Federal Communications Commission (“FCC Member”) (advisory/non-voting)
- N. One member representing the Cybersecurity and Infrastructure Security Agency (“CISA Member”) (advisory/non-voting)
- O. One member representing the Defense Information Systems Agency (“DISA Member”) (advisory/non-voting)
- P. One member representing the Canadian Radio-television and Telecommunications Commission (“CRTC Member”) (advisory/non-voting)
- Q. The Commission may designate additional non-permanent liaison seats at any time through a vote by the majority of its members. The Commission may also dismiss non-permanent liaison members at any time through a vote by the majority of its members.

Subsection 2: Restrictions

- A. No individual organization, government entity, company or equivalent may have more than one Commissioner serving on the Commission at the same time, unless that organization is a trade association.

Section 2: Nomination and Selection

Subsection 1: Call for Nominations

- A. The Board shall direct the NENA Interoperability Program Manager to issue a call for nominations for any open seats on the Commission no later than the last day of January on each calendar year for any pending open positions on the Commission. The NENA Interoperability Program Manager shall endeavor to seek nominations from bodies that can meaningfully represent an interest area

or body of members, such as professional associations, rather than from individuals.

- B. Nominations for NIOC regular appointments will be accepted through the last day of February.
- C. The NENA Interoperability Program Manager shall review each nomination application for completeness and provide an overview of each nomination to the Board.

Subsection 2: Selection

- A. The Board shall review nominations for regular elections and convene a vote to appoint Commission members during the month of March each year, or at the Board's earliest convenience.
- B. In order to be appointed, Commission members must be affirmed by a two-thirds (2/3) vote of all Board members serving during the nomination deadline.
- C. In the case of competing nominations (e.g., more than two State Members are nominated simultaneously), the Board shall select their preferred representative from those nominated by a majority vote of the Board.
- D. In considering nominees, the Board shall endeavor to ensure that nominees represent the whole of NENA's membership and stakeholder base, including, for example, members from both urban and rural communities and applicable communities outside of the United States where jurisdictions elect to utilize the PCA overseen by the Commission.

Section 3: Tenure and Succession

Subsection 1: Tenure

- A. Each commissioner shall serve in two-year terms, with the exception of the current NENA CEO or their delegate, who has a permanent seat.
- B. Commissioners may serve unlimited consecutive terms, at the discretion of the Board.
- C. For the first term only, the following positions are established for a three-year term as designated by the Board:
 - i. The DSC Member;
 - ii. The State Member;
 - iii. The Local Member;
 - iv. The Core Services Member; and
 - v. The Elected Member.
- D. The term of office for each Commissioner shall not expire until their successors are duly appointed and qualified.

Subsection 2: Departure from the Commission

Item 1: Resignation and Removal

- A. A commissioner may resign at any time.
- B. If a Commissioner becomes unable to discharge the duties attendant upon their position, they shall notify the Board of such inability within fourteen (14) days.
- C. A commissioner may be removed at any time upon a 2/3 vote of Commission's standing members (not including the commissioner proposed for removal), or upon a 2/3 vote by the Board.
- D. If a Commissioner no longer meets the eligibility requirements or qualifications for the position to which they were elected or appointed, they shall promptly resign.
- E. An individual whose affiliation changes so that they no longer represent the interest group for which they were appointed to represent (e.g., a State Member who accepts employment in the private sector or an elected official's term in office ends) must resign from the Commission immediately.

Item 2: Clause Filling A Commission Vacancy

- A. When a vacancy occurs among the voting members of the Commission, the NENA Interoperability Program Manager shall seek nominations for that seat from bodies that can meaningfully represent an interest area or body of members, such as professional associations, rather than from individuals, and shall make their recommendation(s) to the Board. The Board shall, at their earliest convenience, confirm that recommendation or may appoint another eligible and qualified nominee to serve out the remainder of the term. In the case of a non-voting seat, the entity represented shall have the ability to provide an alternate member at its discretion.
- B. Commissioners appointed to fill a seat vacated more than one year before the end of that seat's term shall complete the term and afterward be subject to the regular nomination and appointment requirements of the seat.
- C. When a vacancy occurs among the Commission due to death, disability, resignation, or removal, the Board shall appoint an otherwise eligible and qualified nominee to serve the remainder of that Commissioner's term, provided, however, that the Commission may leave vacant a Commissioner's seat when no more than 6 months remains in the current term for the vacant seat.

Article 5: Powers

- A. The Commission may set policies and procedures for certain services required for NG9-1-1 interoperability, including, but not limited to:
 - i. approval of a vendor contract to provide services for the PCA;
 - ii. execution of a Certificate Policy (CP) governing terms of utilization and management of the PCA, including architecture, minimum service level agreement (SLA), certificate issuance, expiration and revocation;
 - iii. approval of a fee schedule for credential issuance from the PCA;
 - iv. approval of a vendor contract to provide services for the Forest Guide;
 - v. approval of Forest Guide Policy (FGP) governing the terms of utilization and management of the Forest Guide, including architecture, management and provisioning of geospatial data and routing policies; and
 - vi. approval of a fee schedule for the Forest Guide, if required.
- B. The Commission may resolve conflicts or appeals under documented policies for the Services.
- C. The Commission may review and approve the finances of Commissioned-sanctioned activities, such as and including the Services.
- D. The Commission shall conduct an audit, review its results, and issue an audited financial statement to the Board at least once each two calendar years.
- E. The Commission may periodically review the interim financial reports prepared by the NENA Office to ensure adequate management of financial performance.

Article 6: Meetings

- A. The Commission shall meet at least once per calendar quarter. An organizational meeting shall normally be held during the month of April each year.
- B. The Commission may meet by telephone conference call or other electronic means, provided that all members may hear and speak to one another at the same time.
- C. Special meetings of the Commission may be called by the Chair or by any six (6) members of the Commission.
- D. Notice shall be sent to all Commissioners at least fourteen (14) days in advance of a regular meeting, if possible, and at least twenty-four (24) hours in advance of a special meeting.
- E. Notice of regular or special meetings may be sent by electronic mail or other methods approved by the Commission and may be waived by a vote of a majority of the whole voting body of the Commission, provided, however, that any action taken at a meeting subject to a notice waiver must be re-considered by the Commission at the next subsequent meeting for which notice is not waived upon the request of any member of the Commission.
- F. A majority of the number of Commissioners in office at the time of a meeting shall constitute a quorum for the conduct of business.

- G. In general, the Commission may act by consensus. If consensus cannot be achieved, the Commission shall act by plurality vote, unless these Bylaws require a simple or larger majority for a particular action.
- H. Each authorized Commissioner may participate in meetings, make motions, offer new business, speak in debate, and cast one vote.
- I. Non-voting members shall participate in meetings, may make motions, offer new business, and speak in debate, but shall neither vote nor be counted as a Commissioner for purposes of calculating a quorum or required majority.
- J. The Commission shall keep, or cause to be kept by a designee, minutes of the Commission's discussions and actions. The minutes of each meeting shall promptly be posted to the Commission's website, once approved, as corrected, at a subsequent meeting.
- K. When necessary or prudent to protect the interests of the Commission, the Commission may hold confidential discussions among its members and invited guests in an executive session. No action shall be taken, however, until the Commission has returned to open session. The minutes of the meeting during which an executive session is held shall note the occurrence, and a general statement of the subjects discussed.

Article 7: Officers

Section 1. Chair

- A. At the Commission's annual organizational meeting, the Commission shall, by a majority vote of the Commissioners, elect an individual to convene and chair the Commission, subject to Board approval .
- B. This individual shall be chosen from among the voting, non-commercial members of the Commission.
- C. This individual shall not be the President or the President's delegate to the Commission.
- ~~D.~~ In the event that the Chair's seat is vacated, the Vice Chair shall serve as interim Chair. In this event, the Vice Chair shall forthwith convene a meeting of the Commission to elect a new Chair.

Section 2. Vice Chair

- A. The Commission shall elect one of its members to serve as Vice Chair of the Commission.
- B. This individual shall be chosen from among the voting, non-commercial members of the Commission.
- C. During the temporary absence of the Chair, the Vice Chair shall assume the roles, responsibilities, and duties of the Commission Chair.



Section 3. Treasurer

- A. The Commission shall elect one from their number to serve as Treasurer.
- B. This individual shall be chosen from among the voting members of the Commission.
- C. The Treasurer shall provide oversight of the financial activities of the Office performed on behalf of the Commission as described in Article 12 of these Bylaws. These activities shall include, but not be limited to:
 - a. Collection of fees and administration of expenditures,
 - b. Administration of all contracts on behalf of the Commission,
 - c. An accounting of the Commission's revenues and expenditures separate and distinct from the general fund of the Association, and
 - d. Other duties responsibilities as specified in the Commission's policies and procedures.
- D. In the event any abnormal and/or unexpected financial activity is detected, it shall immediately be reported to the Chair and Vice Chair.

Section 4. Secretary

- A. The Commission shall elect one from their number to serve as Secretary.
- B. This individual shall be chosen from among the voting members of the Commission.
- C. The Secretary shall provide oversight of the administrative activities of the Office performed on behalf of the Commission to ensure:
 - a. the production and distribution of accurate minutes of all meetings of the Commission,
 - b. the proper publication and distribution of official correspondence and other documents on behalf of the Commission, and
 - c. that all notices are duly given in accordance with these Bylaws or as required by law or by the policies of the Commission.

Section 5. Election and Terms of Office

- A. The regular election of Officers of the Commission shall occur at the Commission's organizational meeting, normally held during the month of April each year.
- B. With the exception of filling an unexpired term, Officers shall serve a term of one (1) full year and may serve no more than two (2) consecutive one (1) year terms in any single office.
- C. The term of office for each officer shall not expire until their successors are duly elected and qualified.



- D. Officers shall be elected by a majority vote of the voting members of the Commission present and voting at a regular or special meeting of the Commission convened for that purpose.

Section 6. Definitions

- A. "Non-commercial member". For the purposes of this Article, the term "non-commercial member" or "non-commercial industry member" shall mean an individual who derives no more than 15% of their income from for-profit or commercial activity that is connected in any way to the 9-1-1 industry.

Article 8: Administration

Section 1: Office & Staff

- A. The Office shall employ such staff as is necessary for conduct of the Commission's business, including but not limited to oversight of the contract services for the PCA.
- B. The Office shall provide a direct staff liaison for the Commission. Such individual may also be nominated as the CEO's delegate to the Commission.

Section 2: Property

- A. All property of the Commission shall be held in accordance with the Bylaws of the Association.

Article 9: Dissolution

Section 1: Procedure

- A. This Commission may be dissolved by a vote of four-fifths (4/5) of the whole voting body of the Commission.

Section 2: Distribution of Assets

- A. Should the Commission be dissolved, all assets attributable to the Commission shall be deposited into the NENA general fund.

Article 10: Parliamentary Procedure

- A. The rules contained in the current edition of *Robert's Rules of Order Newly Revised* shall govern this Commission in all cases in which they are consistent with these Bylaws and any special rules of order which the Commission or the Association may adopt.



Article 11: Amendment

Section 1: Proposal

These Bylaws may be amended provided each of the following conditions is met:

- A. An amendment is proposed by any Commission member; and
- B. The amendment is approved by two-thirds (2/3) of the whole voting body of the Commission, and
- C. The amendment is approved by two-thirds (2/3) of the whole number of Officers and Directors of the Board.

Section 2: Review

When one or more authorized proponents submits a timely proposed amendment, the Commission shall:

- A. Review the submission(s) and edit for composition and conformance with the structure and defined terms of these Bylaws;
- B. Consolidate similar amendments for joint presentation to the Commission, subject to the approval of the proponent(s) of each amendment consolidated;
- C. Submit final proposals for amendments to the membership at least one week prior to the next regularly scheduled meeting of the Board; and
- D. Provide a written recommendation for action by the Board based on the Commission's review of the proposed change(s).

Section 3: Adoption

A duly proposed and reviewed amendment shall be incorporated into these Bylaws only if it receives the affirmative vote of two-thirds (2/3) of the whole voting body of the Board.

Section 4: Effective Date

- A. All amendments to these Bylaws shall become effective immediately upon adoption by the Board, unless a provision is simultaneously adopted to change the effective date. Such provisions shall automatically be removed from these Bylaws upon their execution.
- B. Adopted amendments shall be incorporated into the official publication of these Bylaws on the Association's website within thirty (30) days.

Article 12: Finances

- A. The Office shall collect fees and administer expenditures on behalf of the Commission.
- B. The Office shall be reimbursed for reasonable management costs for executing the work of the Commission, including executive staff time, the administering of any and all contracts on behalf of the Commission and attendant travel costs or other expenses.

- C. Members of the Commission shall serve on a volunteer basis and shall not be offered a salary, reimbursed for time served as a member or receive any other consideration with respect to executing their duties as Commissioner.
- D. Members of the Commission shall be reimbursed for reasonable costs incurred on executing work of the Commission, including travel costs.
- E. The Office shall maintain an accounting of the Commission's revenues and expenditures separate and distinct from the general fund of the Association.
- F. The revenues and expenditures of the Commission shall be generally open and available to the public.

Article 13: Conflict of Interest Policy

Section 1: Policy

- A. At each meeting of the Commission, immediately following a call to order, the Chair shall recite the conflict of interest policy, section 1, in full.
- B. As a general policy, members of the Commission must not hold any personal or financial interest in such areas as governed by the Commission.
- C. In those cases where a Commissioner does have a financial or personal interest in any matter coming before the Commission, the Commission shall ensure that:
 - i. The interest of such officer or director is fully disclosed to the Commission;
 - ii. Any transaction in which a Commissioner has a financial or personal interest shall be duly approved by the Commission members not so interested or connected as being in the best interests of the organization;
 - iii. Compensation to the interested Commissioner shall be reasonable and shall not exceed fair market value;
 - iv. The minutes of meetings at which such votes are taken shall record such disclosure, abstention, if appropriate; and rationale for approval.
- D. An individual's employment affiliation shall not be considered, on its own, to constitute a conflict of interest.

Section 2: Removal of Member

If a Commissioner is found upon two-thirds (2/3) of the whole voting body of the Commission to hold substantial conflicts of interest, whether disclosed or not, the individual shall be removed from the Commission immediately.