KENAI PENINSULA BOROUGH
RESOLUTION 2004-031

A RESOLUTION ADOPTING SECTION 5 OF THE PUBLIC SAFETY COMMUNICATIONS STRATEGIC PLAN FOR THE KENAI PENINSULA BOROUGH AS RECOMMENDED BY CONSULTANTS GARY E. BOYD AND ASSOCIATES AND WILLIAM L. DOOLITTLE AND ASSOCIATES

WHEREAS, the KPB Assembly by Resolution 2003-078 awarded a contract to consultants Gary E. Boyd and Associates, Inc. and William L. Doolittle and Associates, Inc., for the development of a Public Safety Communications Strategic Plan; and

WHEREAS, the final plan was received from the consultants by the KPB Office of Emergency Management on February 19, 2004; and

WHEREAS, the plan incorporates the concerns, issues and needs derived from meetings with local public safety responders; and

WHEREAS, the Public Safety Communications Plan has been distributed to public safety agencies for comment; and

WHEREAS, the comments received were evaluated by the consultants and incorporated into the final Plan where appropriate; and

WHEREAS, the consultants recommend in Section 5 of the report a series of projects that will improve the public safety communications in the borough; and

WHEREAS, the State of Alaska Land Mobile Radio ("ALMR") project is a statewide effort to develop and implement a communications systems capable of providing interoperable wireless voice systems for first responders, mutual aid and emergency and medical response personnel; and

WHEREAS, an objective of the ALMR is to develop an interoperable trunked radio communication system based on national standards in which federal, state, local, and military representatives can operate autonomously and transition seamlessly to communicate effectively in emergency mission roles; and

WHEREAS, according to the consultants, the ALMR project "provides an excellent opportunity to develop a high-technology, high-reliability, high-capacity

infrastructure which will meet most or all of the local agency needs and enable cost-sharing with other user agencies"; and

WHEREAS, the Tri-Borough Interoperability Focus Project ("Tri-Borough Project") is a proposed partnership between the local, state and federal public safety and homeland defense agencies to implement the ALMR project in the Matanuska-Susitna Borough, the Municipality of Anchorage and the Kenai Peninsula Borough; and

WHEREAS, the Tri-Borough project presents a unique opportunity to seek federal funding to facilitate building the communications infrastructure needed to connect the Kenai Peninsula Borough to the statewide communications systems;

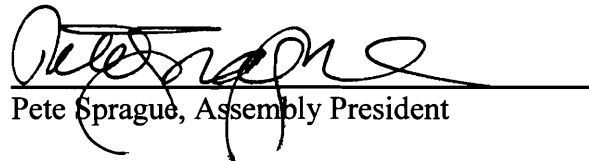**NOW, THEREFORE, BE IT RESOLVED BY THE ASSEMBLY OF THE KENAI PENINSULA BOROUGH:**

SECTION 1. Section Five of the Public Safety Communications Strategic Plan, containing the consultants' recommendations, is hereby adopted by the Kenai Peninsula Borough Assembly as a plan for improving the public safety communications systems within the Kenai Peninsula Borough.

SECTION 2. The KPB Assembly supports participation by the borough in the Tri-Borough Interoperability Project; and
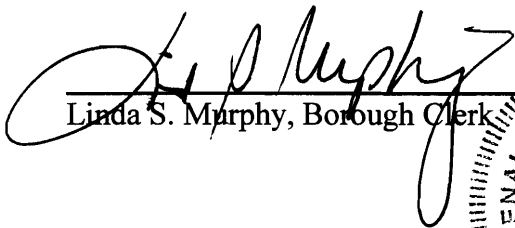
SECTION 3. The mayor is authorized to negotiate contracts as deemed appropriate to implement the strategic plan recommendations and participate in the Tri-Borough Interoperability Project, subject to assembly approval of the contracts and the appropriation of funds.
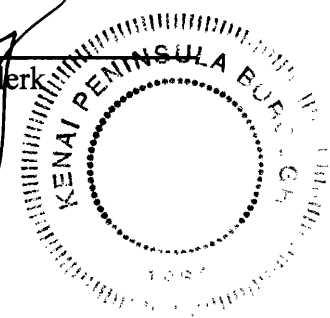
SECTION 4. This resolution takes effect immediately upon its adoption.

ADOPTED BY THE ASSEMBLY OF THE KENAI PENINSULA BOROUGH THIS 16TH DAY OF MARCH 2004.

Pete Sprague, Assembly President

ATTEST:

Linda S. Murphy, Borough Clerk

SECTION 5
RECOMMENDATIONS

This Section summarizes conclusions the consultants have drawn from the analysis of requirements and alternatives, and outlines recommended projects.

CONCLUSIONS

The consultants conclude that:

- The administration of public safety communications needs to be strengthened. The Borough and Cities should improve their interagency agreements and the visibility of collection of revenues, distribution of funds, and monitoring of expenditures.

- There is a critical need to ensure that residents and visitors can be quickly and efficiently located in emergencies. The Borough and Cities should standardize and complete the assignment of street names and property addresses Borough-wide, and strengthen the geographic information systems supporting emergency response.

- Some of the communications centers in the Borough have inadequate workspace, equipment and staffing. The Borough and Cities should improve the facilities, increase their staffing, update their equipment maintenance contracts, and strengthen the emergency medical dispatch quality assurance program.

- The 9-1-1 system needs additional improvements. The Borough and its 9-1-1 Board should upgrade the system to minimize call transfers, improve overall reliability, upgrade supporting databases, and implement wireless Phase I and II.

- The Alaska Land Mobile Radio project offers an opportunity to improve Borough-wide radio system coverage, reliability, capability, and interoperability. and to ease the transition to Federally-mandated narrowband operation. The Borough and Cities should take an active role in ALMR planning to ensure that local agency needs are appropriately considered.

- The Borough's s indoor and outdoor warning systems should be more reliable, more effective, less expensive to operate, and easier to activate and control. The

Borough and Cities should upgrade the sirens and other systems, and integrate and automate their controls.

- The Borough's communications centers need better information systems to support their operations and share information with each other. The Borough and Cities should plan, procure and implement local computer-aided dispatch systems, which integrate together into a coordinated regional system. The CAD systems should include the real-time map display capability needed for wireless 9-1-1 Phase I and II.

RECOMMENDATIONS

The consultants envision and propose a future Kenai Peninsula Borough emergency communications system in which:

- The system is governed by clear ordinances and memoranda of understanding;
- All wire-line telephones have dispatchable addresses;
- All communications centers are properly equipped and staffed;
- All mobile and portable radios can communicate Borough-wide;
- Any center can quickly activate public warning;
- All centers are supported by computer-aided dispatch;
- Automated maps at each center show call, incident, and unit locations;
- 9-1-1 Calls are automatically routed directly to the closest centers;
- Each center can monitor and backup any of the others; and
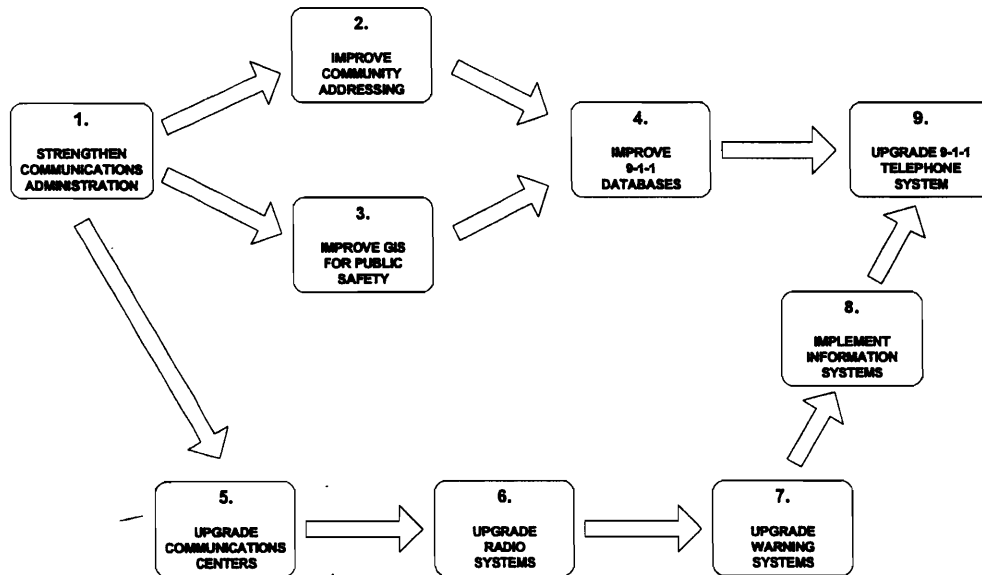- System performance is continuously monitored.

To implement this vision, a program of nine projects is recommended:

1. Strengthen Communications Administration
2. Improve Community Addressing
3. Improve GIS for Public Safety
4. Improve 9-1-1 Databases
5. Update Communications Centers
6. Upgrade Radio Systems
7. Upgrade Warning Systems
8. Implement Information Systems
9. Upgrade 9-1-1 Phone System

Exhibit 5-1 illustrates the precedence relationships and relative priorities among the projects. Project 1, Strengthen Communications Administration, can be done in parallel with all of the other projects. Projects 2, 3 and 4 correct and improve community addressing, GIS for public safety, and the 9-1-1 databases, and are of the highest priority ("Immediate Need"). Projects 5, 6, and 7 improve the existing communications centers, radio systems, and warning systems, respectively, and are the next level of priority

("Important"). Projects 8 and 9 implement new computer-aided dispatch and 9-1-1 system capabilities, depend upon all of the preceding projects being completed first, and are the third level of priority ("Desirable") at least in the short term. They will rise to higher priority when the other projects have been completed.

EXHIBIT 5-1
RECOMMENDED PROJECTS

Each of the projects comprises a number of major tasks as described below. The Borough and Cities have already initiated some of the projects and tasks, but they are included in this report to place them into the context of the overall strategic plan.

The project summaries do not show funding, schedule or resource requirements. Project costs are estimated in Section 6 of this Strategic Plan, and project schedule and resource requirements are estimated in Section 7.

PROJECT 1: STRENGTHEN COMMUNICATIONS ADMINISTRATION
Priority: 3 (Desirable)

The purpose of Project 1 is to strengthen the definition of agency roles and responsibilities in emergency communications; reflect those roles and responsibilities in consistent and effective ordinances and written interagency agreements; improve the monitoring and control of emergency communications revenues and expenditures; and participate in State-level initiatives to increase 9-1-1 surcharge revenues.

Task 1.1: Define Roles and Responsibilities

The Borough, AST and the Cities should jointly review and, if necessary, clarify roles and responsibilities for administration, operation and funding of emergency communications.

For example, KPB Chapter 2.60 as amended by Ordinance 2003-07 provides that "The mayor is authorized to establish an emergency communications system throughout the borough outside of the cities to provide a 911-type communications system and to provide dispatch services both directly or through agreements." The code goes on to state that "The services of this system shall be provided to the residents of any city which relinquishes its emergency communications powers to the borough. Relinquishment of such powers by a city shall not prohibit the automatic electronic routing of calls to such city." Further, the code states: ""Emergency communications system" is defined as a system for automatically or manually accepting and routing emergency 911 calls to the authorized police, fire or emergency medical service provider. Emergency communications powers relinquished by the cities do not include dispatch services." However, the code leaves open several areas of uncertainty, such as:

- Does "...accepting and routing..." of emergency calls include equipment and staffing to answer the calls once they have been routed to a city? (The Borough currently provides the call answering equipment for all of the centers, and six staff positions for the Soldotna (AST) center.)

- What is the definition of "dispatch services"? Is it only radio system operation, or does it also include 9-1-1 call answering? Answering of calls on lines other than 9-1-1?

- Who would be responsible for planning, funding, procurement and operation of CAD systems? Or for the data network to interconnect CAD systems into an integrated regional system?

- Who would be responsible for a radio infrastructure shared by multiple user agencies?

- Technical support is a problem area for all of the agencies. Could or should that be a shared responsibility?

Appendix A to this Strategic Plan Report provides additional information about the current statutory and contractual responsibilities of the Cities and Borough for emergency communications

Task 1.2: Update Ordinances and MOUs

Once the agency roles and responsibilities have been reviewed and clarified, the Borough and City ordinances and memoranda of understanding should be updated accordingly as needed. The agreements should also specify performance expectations, such as call routing service area boundaries, minimum staffing levels, maximum call answering delays, data to be collected and reported, payment to be provided, etc. The ordinances and MOUs to be reviewed should include:

- The Borough 9-1-1 code (KPB 2.60)

- Emergency Communications MOUs between the Borough, AST, Cities, and fire and ambulance agencies.

- MOUs reflecting the maintenance and sharing of GIS data to be used for maintaining the MSAG data base and auditing the ALI and selective routing data bases which control the 9-1-1 system.

In the future new ordinances and MOUs, or modification of existing agreements, may be needed to address new systems, roles and responsibilities such as sharing of radio infrastructure, sharing of information through a regional distributed CAD system, or activation of alert and warning systems.

Task 1.3: Strengthen Financial Controls

Alaska State Statute AS 29.35.131 requires that "The municipality may only use the enhanced 911 surcharge for the enhanced 911 system". The Borough should segregate and account for 9-1-1 surcharge revenues separately from the general fund to ensure and demonstrate compliance with this requirement.

The 9-1-1 surcharge is intended for the entire Borough-wide 9-1-1 system, and the radio, alerting, information systems, and other communications systems will increasingly function as an integrated, unified, Borough-wide system. Accordingly, system revenues, interagency transfer payments, and operating and capital expenditures should be monitored, reported and tracked on a system-wide Borough-wide basis. The agencies should jointly develop a standardized format for accounting and tracking revenues and expenditures, and for sharing and consolidating cost data into reports which provide a clear picture of system-wide financial status.

Task 1.4: Participate in State-Level Initiatives

The Statewide maximum 9-1-1 surcharge level of $0.75 was established at a time when the Borough's emergency communications costs were less than half what they are now. The Borough should participate in regional and Statewide efforts through the Alaska chapter of NENA to encourage the Legislature to review and possibly increase the 9-1-1 surcharge.

PROJECT 2: IMPROVE COMMUNITY ADDRESSING
Priority 1 (Immediate Need)

The purpose of Project 2 is to provide ensure accurate, consistent and complete street names and addresses throughout the Borough.

Task 2.1: Update Addressing Ordinances

In order to efficiently locate callers and direct emergency responders it is vital that there be a logical and consistent system for naming streets and assigning addresses Borough-wide, and for providing accurate location information to dispatchers at the time of an emergency. The Borough and Cities should review and update their ordinances controlling the assignment of street names and addresses to make them consistent with each other and compliant with NENA 02-010 and U.S. Postal Service Publication 28. Specifically, the ordinances should:

- Be consistent with each other;
- Cover both public and private roads;
- Establish authorization to assign street addresses;
- Require that all locations having a wireline telephone must have a dispatchable address;
- Provide consistent procedures for numbering occupancies in multi-occupancy building;
- Provide consistent formulas for calculating new street addresses;
- Establish a legal limit for street name lengths (the NENA standard is 40 characters);
- Require consistent use of NENA-standard abbreviations for street types (avenue, place, circle, etc.)
- Require addresses to be posted and maintained in a timely manner;
- Require addresses to be always visible from the street;
- Establish authorization to name and rename streets;
- Establish authorization to approve the naming of streets;
- Require street signs to be posted at all intersections; and
- Include provision for enforcement.

Task 2.2: Accelerate Addressing Project

The existing street name, address and 9-1-1 database errors and anomalies are an urgent priority. The Borough should add permanent staff to ensure adequate ongoing maintenance and compliance with the updated ordinances. It may also be necessary to add temporary staff and/or professional contract assistance as needed to quickly clear out the current updating and error correction backlog.

PROJECT 3: IMPROVE GIS FOR PUBLIC SAFETY
Priority 1 (Immediate Need)

The purpose of Project 3 is to upgrade the Borough's Geographic Information System to better enable it to serve as an accurate and consistent source of data for 9-1-1 and other public safety applications.

Task 3.1: Develop GIS Plan

The Borough has an urgent need for a master source of complete and accurate data for identifying the location of emergency callers and directing emergency responders. The Borough's GIS is the logical tool for that purpose, but is not yet fully prepared for that responsibility. The Borough and Cities should conduct a comprehensive review of requirements and develop plans for upgrade of the Borough's GIS to enable it to fully support public safety applications. The plans should include:

- The design of GIS data layers to support enhanced and wireless 9-1-1 in conformance with NENA 02-010, Exhibit 22;

- Sufficient ground control points to ensure the spatial accuracy required to support public safety operations;

- Systems and procedures for collecting and consolidating data from the multiple agencies into a continuous Borough-wide public-safety coverage;

Task 3.2: Update ESZ Boundaries

The definition of emergency service zone boundaries is critical to the proper control of the selective routing of 9-1-1 calls and the operation of Community Alert Notification System. The Borough and cities should conduct an initial review and subsequent periodic reviews to update the ESZ boundaries to respond to changes in responder agency jurisdictional patterns. Subdivision of large or heavily populated ESZs should also be considered, to support more accurate targeting of outbound telephone dialing from the CAN warning system.

Task 3.3: Update GIS Layers

Once consistent policies for street naming and addressing have been developed and documented in Project 2, a public safety GIS plan has been developed and documented in Task 3.1, and the ESZ boundaries have been updated in Task 3.2, the Borough and cities should promptly implement the plan. Implementation will include:

- Configuring the GIS for the revised and new public safety GIS data layers;

- Coordinating with multiple agencies to collect the data to populate the layers into a continuous coverage;

- Editing and correcting the data to conform with the standards established in the public safety GIS plan;

- Activating new procedures for ongoing audit and maintenance of the public safety GIS layers.

PROJECT 4: IMPROVE 9-1-1 DATABASES
Priority 1 (Immediate Need)

The purpose of Project 4 is to establish effective and enforceable agreements with telephone carriers, and to improve the databases they use to control and operate the 9-1-1 system.

Task 4.1: Negotiate Carrier Agreements

The present 9-1-1 system uses an ALI database with missing addresses and a high overall error rate. Update of ALI records is inconsistent among the various telephone companies. There is no effective agreement currently in place with the ACS for ALI database management services, and the previous agreement lacks performance requirements. Selective routing has been only partially implemented There is also a need for improvement of the 9-1-1 trunk circuit network, and for implementation of wireless 9-1-1.

Consequently, the Borough needs to negotiate new agreements with the wireline and wireless telephone carriers serving the Borough, covering 9-1-1 database management, trunking, routing, and implementation of Phase I and II. The revised agreements must include enforceable, well-defined performance criteria in such areas as database accuracy, update timeliness, database access response times, trunk access grade of service, call routing accuracy, wireless location determination accuracy, performance monitoring and reporting, overall system reliability and availability, and maintenance support.

Task 4.2: Update MSAG/ALI Procedures

In parallel with the Task 3 project to upgrade the Borough's GIS for public safety use, the Borough must develop new procedures for using the GIS data to support the 9-1-1 system. Specifically, the Borough must develop effective new systems and procedures to:

- Capture 9-1-1 address display error reports from the PSAPs and route them to the GIS Department and telephone company;

- Receive ALI update error reports from the telephone company and route them to the GIS Department;

- Update the GIS to correct the errors, and to incorporate new data and corrections from other sources such as the Borough and City Planning Departments, cellular telephone carriers, etc.;

- Extract data from the GIS to update the 9-1-1 MSAG file on a frequent periodic basis;

- Transmit the updated MSAG data to the telephone company;

- Conduct periodic audits of the MSAG and ALI databases.

Task 4.3: Initiate Database Audits

As the Borough's GIS becomes more fully capable of providing the data needed for 9-1-1, and effective data management procedures have been established, begin conducting periodic audits of the telephone company 9-1-1 databases against the GIS, and update all of the databases to correct any discrepancies.

PROJECT 5: UPGRADE COMMUNICATIONS CENTERS
Priority 2 (Important)

The purpose of Project 5 is to upgrade the communications center staffing, procedures, facilities and equipment to current national standards.

Task 5.1: Increase Dispatch Staffing

There is a general recognition across the United States that every public safety emergency communications center should have a minimum of two persons on duty at all times, 24 hours per day every day. This level of staffing helps to ensure that emergency communications is not disrupted by lunch and rest breaks, the sudden illness or disability of a dispatcher, or peak call volumes and multiple simultaneous calls. Traffic accidents and other readily visible emergencies now frequently generate dozens of nearly simultaneous 9-1-1 calls from cellular telephones, quickly overwhelming a single dispatcher.

The requirement for two dispatchers on duty at all times is particularly important in centers which have implemented emergency medical dispatching (EMD), as have of the centers in the Kenai Borough. EMD requires a dispatcher to remain on a medical emergency 9-1-1 call for an extended period of time, providing medical guidance and advice to the caller while emergency responders are enroute. A second dispatcher must be available to handle all of the other incoming calls and ongoing incidents while the medical response is in progress. As a result, the National Fire Protection Association Standard 1221 requires a minimum of two dispatchers on duty at all times in centers using EMD procedures.

Several of the communications centers in the Borough are unable to maintain minimum staffing of two dispatchers at all times, and all of the centers (together with virtually all centers in the United States) have difficulty attracting and retaining qualified applicants for this difficult and demanding work.

Consequently, the centers need to explore all options for increasing and maintaining staffing to the required minimum two-dispatcher level. These could include, for example:

- Review and improve recruiting, staffing, training, and other personnel policies and procedures to attract and retain more dispatchers;

- Seek out new sources of funding, such as an increase in the 9-1-1 surcharge;

- Divert financial resources from lower-priority uses.

Task 5.2: Re-Activate EMD Q/A

Once staffing has reached adequate levels, re-activate the Borough's Emergency Medical Dispatch (EMD) quality assurance review process. This process applies a thorough and consistent review methodology to every 9-1-1 call where EMD procedures were use, to ensure that a consistent and effective high quality of medical guidance and advice is being provided. An active and effective QA process is required to ensure a high quality of service to the public, minimize liability, and ensure continued certification of the EMD program in the communications centers.

Task 5.3: Replace Soldotna/AST Center

Much-needed facility remodeling is currently underway in the Homer and Seward communications centers. However, there remains a need for substantial upgrade of the Soldotna/AST communications center. The center currently has only limited workspace for routine operations, and is unable to accommodate additional staff to help with peak workloads during critical situations.

One alternative would be to remodel the existing facility. However, the entire existing facility is old and crowded, and it is unlikely that a major addition would be cost-effective.

Another alternative would be to relocate to some other existing facility in the Soldotna area. However, there are reportedly no available facilities in the area which could provide adequate space and security and meet all of the stringent and specialized requirements of NFPA standard 1221 for emergency communications centers.

The third and preferred alternative, therefore, is to build a new dedicated facility or plan for space in a new shared facility. The Borough is currently pursuing plans for a new public safety facility in Soldotna near the existing Borough and CES facilities which would be suitable for the purpose. The new center must be designed to provide adequate space for current routine operations, temporary peak loads (at least one additional operator position), and future growth. The center must also meet NFPA 1221 standards for communications centers, and Motorola R-56 standards for equipment installation.

Task 5.4: Equip Soldotna/AST Center

All four of the communications centers were recently equipped with new 9-1-1 call answering equipment. The Kenai center has new radio dispatch console equipment, and the Seward and Homer radio dispatch equipment is currently being replaced. However, the Borough's Soldotna/AST center still has inadequate radio console equipment.

Task 5.4 should replace the Soldotna/AST consoles and related equipment with new equipment similar to the other centers. The consoles must be capable of operating all of the existing radio systems, and be capable of conversion to operate trunked radio systems on an ALMR backbone.

PROJECT 6: UPGRADE RADIO SYSTEMS
Priority 2 (Important)

The purpose of Project 6 is to complete the replacement of mobile and portable radio equipment throughout the public safety agencies in the Borough, and to plan for and implement a new and greatly improved radio infrastructure as part of the State Alaska Land Mobile Radio Project.

Task 6.1: Upgrade Subscriber Equipment

All of the law enforcement and City fire/EMS agencies in the borough are receiving new mobile and portable radios to replace their obsolete and failing equipment. However, there remains a need to replace the mobile and portable equipment in the rural fire service areas and rural fire departments. The new equipment must be capable of dual-mode operation (narrow and wide-band), and must be compatible with plans for the ALMR radio infrastructure.

Task 6.2: Plan Radio Infrastructure

There are numerous problems with the radio infrastructure (radio sites, repeaters, interconnecting control links) in the Kenai Peninsula Borough. These include:

- Obsolete and failing equipment;
- Federal requirement for conversion to narrow-band operation;
- Coverage dead spots;
- Inadequate channel capacity;
- Lack of long-distance communications capability;
- Limited interoperability, particularly with outside agencies;
- Susceptibility to single point failures due to lack of redundancy;
- Operational complexity;
- Lack of security.

As a result, the Borough needs a major upgrade of its radio infrastructure. The State ALMR project provides an excellent opportunity to develop a high-technology, high-reliability, high-capacity infrastructure which will meet most or all of the local agency needs and enable cost-sharing with other user agencies.

Jointly with State staff, the Borough and cities should participate in planning for the implementation of the ALMR radio backbone infrastructure in the Kenai Peninsula. The Borough representatives will need to review local agency requirements and ensure that those requirements are specifically addressed in the system design and administrative arrangements. Local requirements include:

- Coverage of all required areas;
- Possible need for special coverage to portables inside particular buildings;
- Adequate number of talk groups for all local agencies;
- Paging of fire department personnel;
- Radio control links for the Borough siren system;
- Data communications links for interconnecting CAD systems;
- Radio support for future mobile data and automatic vehicle location systems.

The administrative arrangements must ensure that the system is affordable and maintainable for the local agencies. They must also provide an adequate level of local control over the system, for example, assurance that local users of the system cannot be pre-empted by State or Federal users during major emergencies.

Task 6.3: Implement Radio Infrastructure

After an appropriate system design, implementation plan, and administrative arrangements have been developed, and funding has been secured, the Borough should proceed promptly to implement the backbone system in conjunction with the other users.

PROJECT 7: UPGRADE WARNING SYSTEMS
Priority 2 (Important)

The purpose of Project 7 is to upgrade the Borough's siren, Community Alert Notification, and media notification systems.

Task 7.1: Upgrade Siren System

The Borough's emergency siren warning system has grown old and unreliable. Sirens are clearly needed for tsunami warning in exposed coastal areas, and the sirens and supporting radio control infrastructure in those areas need to be upgraded. However, the sirens in the inland areas no longer serve a well-defined purpose and should be considered for decommissioning.

Specific requirements for design of a new or upgraded siren system include:

- Sirens should be electronic, with no moving parts.

- Sirens should be capable of multiple alerting tones, live voice announcements, and pre-recorded digital voice announcements.

- Siren placement and sizing should be in accordance with the recommendations of FEMA Civil Preparedness Guide (CPG) 1-17;

- There should be multiple independent links for control of each siren; for example, radio control and telephone line control. At least one of the control links should be supervised, i.e., automatic reporting of control link failure to the system control point.

- There should be two-way communications with each siren, enabling automatic monitoring of siren status, monitoring of test results, and detection and automatic reporting of various types of alarm and failure conditions.

- The sirens should operate from commercial power where possible, solar power where necessary, and should all have battery backup power supplies capable of at least 30 minutes continuous operation.

- The sirens should be capable of activation and control from computer software as part of an integrated all-hazard warning system.

Task 7.2: Upgrade CAN System

The Borough's Community Alert Notification (CAN) system can automatically dial thousands of telephones very quickly and play pre-recorded messages to the persons answering. This is a very effective system for indoor alerting. However, the should improve two aspects of the operation of the system:

- The system can currently alert only an entire ESZ or pre-designated subset of an ESZ. This can be expensive when the ESZ contains many telephones, and can unnecessarily disturb a large number of people if only a small portion of the ESZ is actually affected by the emergency. The Borough should "fine tune" the system to enable more accurate selection of the specific population to be alerted. Ideally, the system should be enhanced with map-based computer control equipment to enable the operator to designate the area to be alerted by drawing a boundary on a computer map display. As an interim or compromise measure, however, the ESZs in hazard-prone areas could be subdivided into smaller zones for more accurate alerting by zone.

- The system is currently somewhat time consuming to activate, requiring a voice telephone call to a control center in the eastern United States to specify the zones to be alerted and to record or select a message to be broadcast. The Borough should improve system activation by integrating it into an automated all-hazard warning system as discussed below under Project 8, Task 8.3.

Task 7.3: Upgrade Media Notification Systems

The Borough should monitor developments at the Federal level for the improvement of media notification systems (such as the Emergency Broadcast System) and participate where appropriate. These include, for example, the Emergency Warning Act of 2003 (Senate Bill S1181S and House Bill HR2537IH).

The Borough should also investigate the possibility of integrating automatic media notification into the all hazards warning system discussed below in Project

8, Task 8.3. This might be accomplished, for example, by automatic computer generation of fax or e-mail messages for broadcast by the media.

PROJECT 8: IMPLEMENT INFORMATION SYSTEMS
Priority 3 (Desirable)

Task 8.1: Plan and Implement CAD

The Borough's emergency communications centers currently lack any significant automated support for their primary tasks of receiving emergency information from 9-1-1 and other calls for service; determining the nature and location of the emergency; selecting the appropriate units to respond; directing the units to the location of the emergency; monitoring the status of the emergency; and compiling a legal record of all activity on the emergency . They also have no automated support for monitoring the location and status of emergency responders, monitoring the safety of law enforcement officers and fire fighters. Further, none of the communications centers has reliable and efficient means of monitoring activity at the other centers, backing up or sharing the workload of other centers in an emergency, or monitoring the availability and status of responders and other resources outside their own jurisdiction.

The Borough should plan, procure and implement a distributed computer-aided dispatch (CAD) system to address these issues. The system would provide servers and workstations at each communications center to independently support the center, but would link all of the servers through ALMR or other data circuits for data sharing, mutual activity monitoring, and backup. Required CAD system capabilities include the following:

- The CAD system at each communications center must support multiple types of agencies; law enforcement, fire, and EMS. The system must also support multiple agencies of each discipline (e.g., State Troopers and City police).

- Each communications center should be able to easily exchange information with the other centers, for example, urgent locate requests, call for service information, incidents in progress, or the status and location of resources.

- Dispatchers must be able to easily and efficiently capture complete and detailed data regarding incidents, units, and locations, including all relevant dates, times, names, identification numbers, descriptions, etc.

- All of the captured information should be available for immediate access in real time, and should also be stored as a permanent record in a suitable format for reporting and analysis.

- Information should be automatically captured where available from system interfaces, such as to E9-1-1, and in any case should only have to be entered into the CAD system once to be subsequently available whenever and wherever required. Duplicative and redundant manual entry of information should be minimized.

- Location information from callers should be verified against a reliable database of valid street names and addresses, ideally the Borough's GIS. Discrepancies should be recorded and promptly resolved and corrected.

- Dispatchers should be able to easily determine the appropriate law enforcement, fire and EMS jurisdictions for first response to any given location, including locations presented as street name and address, street intersection, highway mile marker, business name, common place or "landmark" name, catalogued alarm number, or cell tower identification.

- The CAD system should assist dispatchers to quickly identify the appropriate units to assign or recommend for assignment to an incident.

- Dispatchers should be able to over-ride any actions of the CAD, operate effectively in a manual mode during any periods of CAD system unavailability, and then easily load the manually-recorded information back into the CAD system in a "catch-up" mode when CAD becomes available again.

- The CAD system at each center should be able to monitor current unit and incident status at the other centers, and request the assignment of resources from the other centers.

- When multiple communications centers are involved in handling the same incident, each center should have access to complete real-time and historical information about all activity on the incident, including activities of the other communications centers.

Task 8.2: Plan and Implement Mapping

In order to implement wireless 9-1-1 Phase I and Phase II the Borough must first plan, procure and implement an automated map display system at each communications center. The mapping system should ideally be procured and implemented as an integral component of a CAD system.

The map system must be able to display the location of each Phase I wireless call in the form of the coverage footprint (generally a wedge shape) of the cell site antenna which received the call. The system must be able to display Phase II caller locations by placement of an icon on the map at the latitude-longitude coordinates of the call. Other general requirements for the mapping system include:

- Pan, tilt, zoom and similar controls for ease of use by the operator.

- Ability to display maps in street centerline and parcel format, as well as topographic maps, aerial photographs, building floor plans, and similar graphics.

- Display incident locations obtained from the CAD system.

- Display unit locations obtained from a future automated vehicle location system.

- Support dispatcher designation of geographic areas to be alerted by the integrated warning system discussed below in Task 8.3, ideally by drawing an arbitrary boundary on the map.

Task 8.3: Plan and Implement Automated Alerting
Priority 3 (Desirable)

Multiple, infrequently-used warning systems can be complicated and time-consuming to activate under the stress of a major emergency.

The Borough should plan, procure and implement an automated all-hazard warning system to streamline activation of the siren, community alert notification, and media notification systems. The system should enable rapid activation of multiple warning systems (sirens, CAN, media notification) by selection of items from menus on a computer screen and drawing warning area boundaries on a map display. The system should also be capable of monitoring the readiness status of all of the warning system elements, and of routinely testing the systems.

The integrated warning control system should ideally be procured as an integral feature of the CAD system, but would likely require some custom development.

PROJECT 9: UPGRADE 9-1-1 PHONE SYSTEM
Priority 3 (Desirable)

The purpose of Project 9 is to upgrade the 9-1-1 telephone system to support selective routing of all calls, improved performance monitoring, and determination of cellular telephone locations.

Task 9.1: Implement Selective Routing

One of the basic design goals of an E9-1-1 system is to automatically route every 9-1-1 call directly to the most appropriate communications center without the need for a call transfer. Currently, 9-1-1 calls are directly routed only to the Soldotna/AST and Kenai centers. Calls intended for Homer and Seward are first answered at the Soldotna/AST center and then transferred. This process slows down the processing of calls, creates additional workload on the Soldotna/AST center, and creates a public perception of inefficiency.

Once minimum required staffing levels have been achieved at all communications centers, and the GIS and 9-1-1 databases have been upgraded and audited, the Borough should order the activation of the E9-1-1 selective routing feature to automatically route 9-1-1 calls to Homer and Seward. The system should also be configured to enable the Soldotna/AST center to serve as the emergency backup for any of the other centers, and for the Kenai dispatch center to serve as the emergency backup for Soldotna/AST. The inactive Soldotna Police Department center may then be de-activated.

Task 9.2: Implement Performance Monitoring

The Borough and its communications centers currently have only limited ability to monitor and assess the performance of the 9-1-1 system. The Borough should implement several types of performance monitoring capability, all specified in the written service agreements with the wireless and wireline carriers previously discussed as part of Project 4, Task 4.1.

The first type of monitoring capability should consist of immediate reports from the carrier to the Borough and the communications centers regarding any significant outage of 9-1-1 system capabilities, such as failure of a switching computer or major trunk group. The reports should be provided within moments of the failure and should indicate the nature of the failure, the expected duration

of the outage, and any corrective actions that need to be taken by the Borough or communications centers.

The second capability should be regular periodic reports from the carriers on the performance of the 9-1-1 switching systems, trunk network, and databases. These would include, for example, "busy studies" to identify failing trunks, identify any need for new trunks, and confirm that the required P.01 grade of service is actually being provided in all parts of the network. The reports would also include statistics on ALI database error levels, and summaries of the status of any outstanding service orders or trouble tickets.

The third type of capability should be provided by software in the communications center call answering server and/or work station equipment to monitor system performance at the PSAP level. The software should accurately measure and report 9-1-1 system performance data such as call volumes, transfer volumes, hourly workloads, call processing times, and equipment reliability. The data should be available for each center individually, and "rolled up" for the entire system across all centers. The software should include a flexible report generator for custom development of special reports.

Task 9.3: Implement Wireless 9-1-1

The Borough should hold early meetings with its 9-1-1 system provider (ACS) and the wireless carriers serving the Borough to begin planning for the implementation of wireless 9-1-1. Required conditions for implementation of wireless E9-1-1 include:

- Ordinances and MOUs among the agencies in the Borough specifying how wireless calls are to be routed to the communications centers and processed (Project 1, Tasks 1.1 and 1.2);

- Updated GIS, accurately representing the street and road network of the Borough, and providing layers for cell site locations and antenna coverage footprints (Project 3, Task 3.3);

- Written agreements with the wireline and wireless carriers specifying the wireless services required, performance levels expected, methods of measuring and monitoring performance, corrective remedies if performance levels are not met, and costs (Project 4, Task 4.1);

- Adequate staffing to handle the wireless call volume (Project 5, Task 5.1);

- Functional mapping systems to accept and display wireless call location data (Project 8, Task 8.2).

Once all of these conditions have been met, or the Borough and cities can demonstrate firm contracts and agreements showing that the requirements will be met within six months, the Borough should issue letters to the wireless carriers requesting them to implement wireless 9-1-1 location service. The carriers then have a maximum of six months to comply.