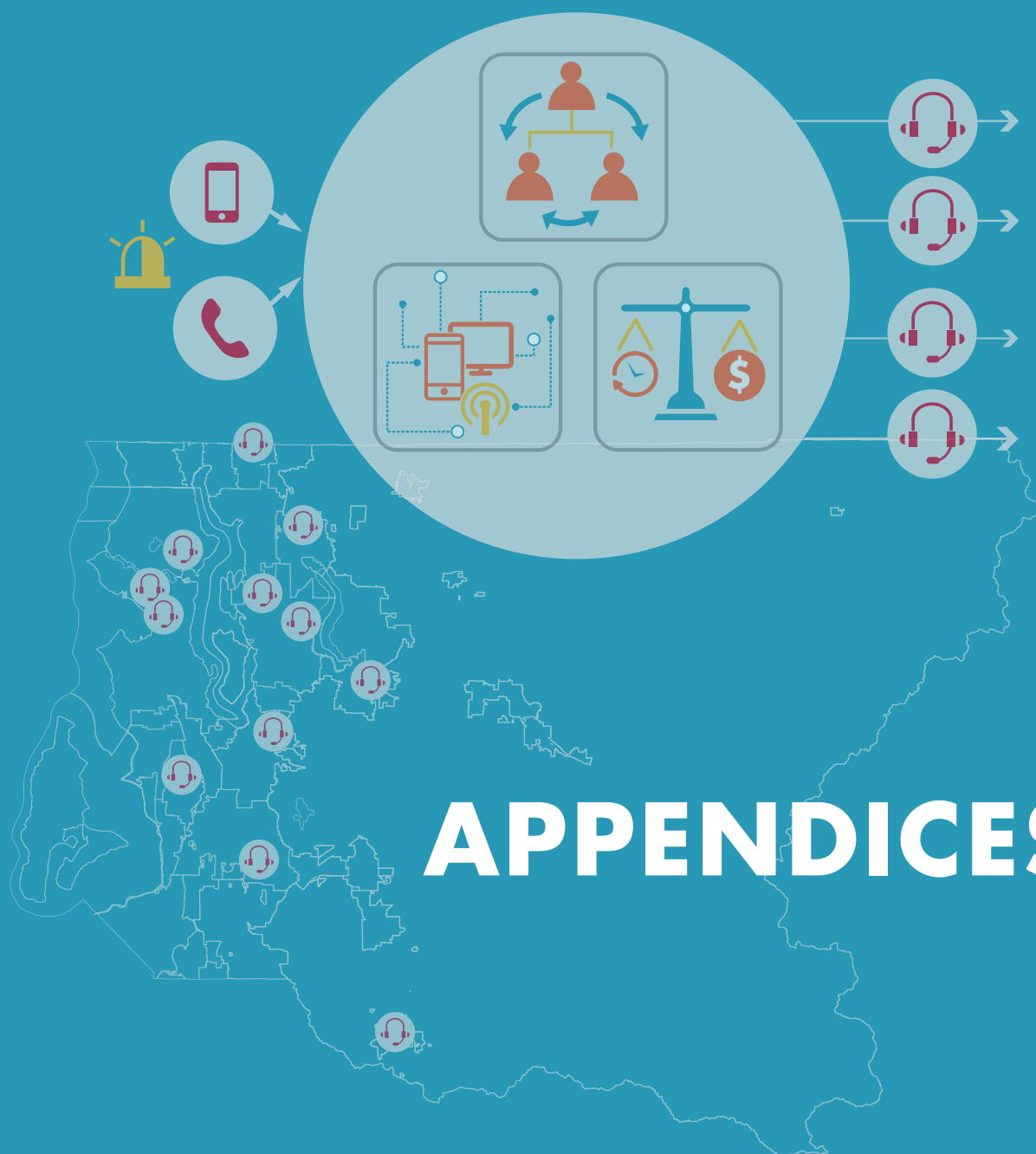




King County

REGIONAL E-911 STRATEGIC PLAN



DECEMBER 2017

APPENDICES

A- SCOPING REPORT	A-3
B- PROCESS BRIEF	A-31
C- ISSUES BRIEF	A-35
D- GOVERNANCE TASK FORCE REPORT	A-70
E- TECHNOLOGY & OPERATIONS TASK FORCE FINAL REPORT (INCLUDES EQUITY OUTREACH REPORT)	A-78
F- FINANCE TASK FORCE REPORT	A-153



REGIONAL E-911 STRATEGIC PLAN SCOPING

SCOPING COMMITTEE

LEADERSHIP GROUP

Councilmember Jennifer Robertson
CITY OF BELLEVUE

Mayor Liz Reynolds
CITY OF ENUNCLAW

Councilmember Tola Marts
CITY OF ISSAQUAH

Executive Dow Constantine
KING COUNTY

Councilmember Reagan Dunn
KING COUNTY

Councilmember Kathy Lambert
KING COUNTY

Councilmember Dave Uptegrove
KING COUNTY

Sheriff John Urquhart
KING COUNTY

Jody Miller
KING COUNTY OFFICE OF EMERGENCY MANAGEMENT

Executive Director Tom Orr
NORCOM

Commander Erik Scairpon
REDMOND POLICE DEPARTMENT

Mayor Denis Law
CITY OF RENTON

Councilmember Lorena González
CITY OF SEATTLE

Council President Bruce Harrell
CITY OF SEATTLE

Captain Ronald Rasmussen
SEATTLE POLICE DEPARTMENT

Hon. Tim Osgood
WOODINVILLE FIRE AND RESCUE

PROJECT COORDINATION TEAM

Executive Director Lara Ueland, Chair
VALLEY COMMUNICATIONS CENTER

Deb Flewelling, Vice-Chair
KING COUNTY E-911 OFFICE

Commander Chris Wilson
ISSAQUAH POLICE DEPARTMENT

Chief Patti Cole-Tindall
KING COUNTY SHERIFF'S OFFICE

Lise Kaye
KING COUNTY COUNCIL STAFF

Captain Ronald Rasmussen
SEATTLE POLICE DEPARTMENT

May 31, 2016

To: King County Council

From: King County E-911 Strategic Plan Scoping Committee
Leadership Group & Project Coordination Team

Re: Strategic Planning Process Report

As set out by Ordinance 18139, the King County E-911 Scoping Committee is pleased to submit the attached Regional E-911 Strategic Planning Process Report to the King County Council.

All of us - as well as many staff members and consultants - have been working diligently for many months to recommend this collaborative process to develop a King County E-911 strategic plan to address priorities for the regional portions of the King County E-911 system and guide the ongoing process for decision making, funding and implementing those priorities.

The attached report begins with a brief summary of relevant history and processes; and outlines the following recommendations:

1. An organizational structure for the strategic planning process;
2. A timeline and milestones for completion of the plan;
3. A regular reporting process to project stakeholders;
4. A Leadership Group, Staff Planning Group; Task Forces on Governance, Technology, and Finance; as well as
5. A Shared Vision, Guiding Principles, Measurable Goals, Initial Key Questions to be explored, and Roles for a regional King County E-911 system that is reflective of national best practices.

The report also addresses issues and questions needed to integrate with the state's E-911 system and the responsibilities of local jurisdictions in their delivery of E-911 dispatch services; develop a 10-year technology investment strategy; develop a 10-year sustainable financial plan; and define an ongoing decision-making and governance structure for the regional E-911 system.

We ask the Council to accept this report. We also ask that the Council please expeditiously accept and confirm the King County Executive's appointments to the strategic planning Leadership Group and Staff Planning Group so that work can begin at once on the strategic plan.

Executive Summary

This report recommends a “*collaborative process to develop a King County E-911 strategic plan to address priorities for the regional portions of the King County E- 911 system and guide the ongoing process for decision making, funding and implementing those priorities.*”¹

The Background section provides an overview of the existing Regional E-911 System, its funding, current challenges, and key entities. The Scoping Charge section cites the requirements of the King County ordinance mandating this process and report. The Roles, Vision, Goals and Guiding Principles section defines the roles, shared vision and measurable goals of the regional King County E-911 system that is reflective of national best practices. The Strategic Plan Scope section outlines the organizational structure; timeline and milestones; stakeholder reporting; work groups and teams; as well as key questions and issues for strategic planning.

Background – The Regional E-911 System is operated by the E-911 Program Office in the County’s Department of Executive Services in cooperation with twelve Public Safety Answering Points (PSAPs), with the E-911 Program Office routing requests and the PSAPs interrogating callers and dispatching services. The Regional E-911 System is funded by excise taxes levied on landline, wireless and voice-over-internet phones. Challenges include funding limitations in the face of needed system upgrades and an absence of consensus among the system’s various entities about next steps and priorities.

Charge – King County Ordinance 18139 created a regional E-911 Strategic Plan Scoping Committee to recommend a strategic planning process. This report has been developed and submitted to meet that requirement.

Roles, Vision, and Guiding Principles – This report defines a shared vision for “King County’s Regional E-911 System that would assure the system is among the best in the country in terms of rapid and effective routing of requests for services; effective deployment of evolving technology; and efficient use of public resources.” The Committee also recommends that the system adhere to specific guiding principles and measurable goals for outcomes, process, finances, and standards. This report further outlines existing roles and defines parameters for the strategic planning process.

Strategic Planning Scope – The recommended Scope for an E911 Strategic Plan sets out an organizational structure, timeline and milestones as follows:

- Timeline - Planning will begin upon the King County Council’s confirmation of committee membership and conclude by December 31, 2017.
- Leadership Group (same structure as the existing Leadership Group constituency) to recommend a Strategic Plan to the King County Executive and King County Council.
- Staff Planning Group (with one representative of each Leadership Group constituency) to prepare recommendations and/or decision options for each of the questions and issues for strategic planning, including supervising the work of content Task Forces.

¹ King County Ordinance 18139, Section 1C.

- Content Task Forces on Governance, Technology, and Finance to deliberate and recommend action on key questions and issues.
- Stakeholders are identified, as well as needed staff and consultant support.
- A Reporting Process to Stakeholders is identified, with specific reports and due dates.
- Strategic Questions and Issues are identified in Governance, Technology, and Finance.

Table of Contents:

Executive Summary	1
Acknowledgements	4
Glossary of Terms and Acronyms	5
1 – Background	7
A. Existing System.....	7
B. Public Safety Answering Points (PSAPs) in King County	8
C. Funding.....	8
D. Current Challenges	10
E. Strategic Plan Scoping Process	10
2 – Scoping Charge.....	11
3 – Roles, Vision, Goals & Guiding Principles.....	12
A. Shared Vision — <i>for the Regional E-911 System</i>	12
B. Guiding Principles — <i>for the Regional E-911 System</i>	12
C. Goals — <i>for the Regional E-911 System</i>	12
D. Roles.....	13
4 – Strategic Plan Scope	14
A. Organizational Structure	14
B. Timeline & Milestones.....	15
C. Stakeholder Reporting.....	16
D. Work Groups & Teams for Strategic Plan	17
Leadership Group.....	17
Staff Planning Group.....	18
Governance Task Force	19
Technology Task Force	20
Finance Task Force	21
Stakeholders for Strategic Planning process	22
Support for Strategic Planning process	22
Consultants (as needed)	22
E. Questions and Issues to be addressed during Strategic Planning	23
Integrate with state system & local responsibilities.....	23
Decision-making or Governance Structure.....	23
10-year Technology Investment Strategy	24
10-year Sustainable Financial Plan:	25
Appendix of Initial Questions and Issues (to be used as a starting point)	26
Decision-making or Governance Structure.....	26
10-year Technology Investment Strategy	26
10-year Sustainable Financial Plan:	27

Acknowledgements

This report is a product of the King County E-911 Strategic Plan Scoping Committee that is made up of a Leadership Group and Project Coordination Team, as appointed by the County Council. Many staff members at King County and local jurisdictions, as well as a team of facilitation consultants, supported the Scoping Committee's work.

Scoping Committee

Leadership Group

Councilmember Jennifer Robertson
CITY OF BELLEVUE

Mayor Liz Reynolds
CITY OF ENUMCLAW

Councilmember Tola Marts
CITY OF ISSAQUAH

Executive Dow Constantine
KING COUNTY

Councilmember Reagan Dunn
KING COUNTY

Councilmember Kathy Lambert
KING COUNTY

Councilmember Dave Upthegrove
KING COUNTY

Sheriff John Urquhart
KING COUNTY

Jody Miller
KING COUNTY OFFICE OF EMERGENCY MANAGEMENT

Executive Director Tom Orr
NORCOM

Commander Erik Scairpon
REDMOND POLICE DEPARTMENT

Mayor Denis Law
CITY OF RENTON

Councilmember Lorena González
CITY OF SEATTLE

Council President Bruce Harrell
CITY OF SEATTLE

Captain Ronald Rasmussen
SEATTLE POLICE DEPARTMENT

Hon. Tim Osgood
WOODINVILLE FIRE AND RESCUE

Project Coordination Team

Executive Director Lora Ueland, Chair
VALLEY COMMUNICATIONS CENTER

Deb Flewelling, Vice-Chair
KING COUNTY E-911 OFFICE

Commander Chris Wilson
ISSAQUAH POLICE DEPARTMENT

Chief Patti Cole-Tindall
KING COUNTY SHERIFF'S OFFICE

Lise Kaye
KING COUNTY COUNCIL STAFF

Captain Ronald Rasmussen
SEATTLE POLICE DEPARTMENT

Staff Support

King County

Diane Carlson, King County Executive's Office
Marlys Davis, E-911 Program Office
Meg Goldman, Department of Executive Services
Tom Koney, Department of Executive Services
Jody Miller, Office of Emergency Services
Laura Pitarys, E-911 Program Office

PSAPs

Captain Ron Rasmussen, Seattle Police
Deputy Chief Mike Teffre, Seattle Fire
Manager Kathy Baskin, Port of Seattle
Manager Sue Carr, University of Washington
Manager Jo Baumgartner, Washington State Patrol
Commander Chris Wilson, Issaquah Police

Captain Bob Huebler, Enumclaw
Executive Director Tom Orr, NORCOM
Captain Patrick Butschli, King County Sheriff
Commander Erik Scairpon, Redmond Police
Director Micki Singer, Bothell Police
Executive Director Lora Ueland, Valley
Communications Center

Consultants

BDS Planning & Urban Design

Brian Douglas Scott
Beth Dufek
Jennifer Rose
Jacqueline Gruber

CBE Strategic

Tim Ceis
Andrés Mantilla
Kate Nolan

Glossary of Terms and Acronyms

9-1-1 Call Routing Network – Together the Washington State 911 office and the King County E-911 Program Office maintain the 9-1-1 call routing network which consists of a system of circuits, networks and/or equipment designed to move 9-1-1 calls from the state system to the Public Safety Answering Points (PSAPs), including the information technology system known as Emergency Services Internet-protocol Network (ESInet).

COTS – Commercial Off The Shelf Software

CPE - Customer Premise Equipment – Equipment used by the PSAP to process 9-1-1 calls.

E-911 Program Office – In King County, the Regional E-911 System for routing 9-1-1 calls is administered by the E-911 Program Office, which is a section of the Office of Emergency Management within the Department of Executive Services in the county government.

EMS – Emergency Medical Services.

ESInet – Emergency Services Internet-Protocol Network - A statewide system for routing emergency calls. ESInet is part of the 9-1-1 Call Routing Network.

FD – Fire Department.

LAG – Interim Advisory Group – The Interim Advisory Group's purpose is to advise and consult with the King County E-911 program office regarding technology, financial and system operational issues until completion of the E-911 strategic plan and implementation of an ongoing decision-making and governance system. The advisory group is guided by King County Council by Ordinance 18139 to provide comment and recommendations on the county's E-911 program office 2017-2018 budget proposal.

NENA – National Emergency Number Association.

NG911 – Next Generation 9-1-1 - A national plan² aimed at updating the 9-1-1 service infrastructure to improve public emergency communications services in an increasingly wireless mobile society. In addition to calling 9-1-1 from a phone, it seeks to enable the public to transmit text, images, video and data to the PSAPs.

PD – Police Department.

PSAP – Public Safety Answering Point – Call answering locations for 9-1-1 calls originating in a given area. In King County, the twelve PSAPs are governed and largely funded by the independent jurisdictions and agencies they serve. PSAPs are responsible for answering a 911 call sent to their center.

² http://cymcdn.com/sites/www.nena.org/resource/collection/22dbdb9d-fbd7-445e-a760-1c39a222ed34/National_NG911_Migration_Plan.pdf?hhSearchTerms=%22NG911%22

Regional E-911 System – In King County, the phrase “Regional E-911 System” – as used in this document only – includes the governance, technology, operations and finances related to the area of responsibility of the E-911 Program Office, as defined by the RCW and WAC (Revised Code of Washington and Washington Administrative Code).³

Telecommunications Providers – Private companies (such as AT&T, Verizon, Century Link, etc.) that provide telecommunications services, route calls, and collect excise taxes.

VoIP calls – Voice Over Internet Protocol calls - Calls through telephone equipment using the Internet.

Washington State 911 Office – The Washington State 911 office and the King County E-911 office share responsibility for maintaining a network and equipment that links private telecommunications providers to the 911 call network.

Wireless calls – Calls through cellphones.

Wireline calls – Calls through traditional landline telephones.

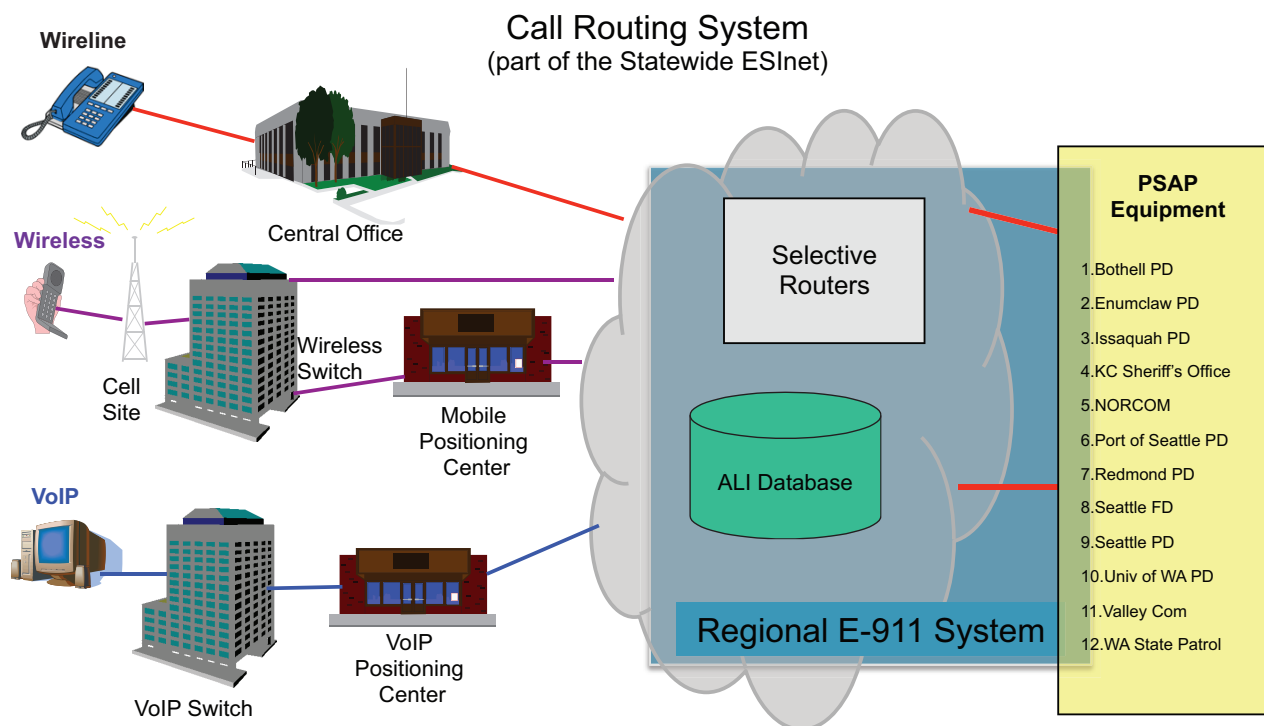
³ See RCW 82.14B.020 (2), (3); WAC 118-66-030 (2), (62); *see generally* RCW 38.52.51; 82-14B-010 *et. seq.*; WAC 118-66-010 *et. seq.*

1 – Background

A. Existing System

The Regional E-911 System in King County is a partnership between the King County E-911 Program Office and 12 Public Safety Answering Points (PSAP) which provide 911 call answering and dispatch services for local jurisdictions (*see list of PSAPs below*). The Program Office, reporting to the King County Office of Emergency Management within the Department of Executive Services, is responsible to ensure correct routing of a 911 call to the appropriate PSAP. Each PSAP, reporting to their local stakeholders, is responsible for the 911 call answering, interrogation, and dispatch of appropriate public safety agencies.

As illustrated below, calls are received by the system via wireline, wireless, and Voice Over Internet Protocol (VoIP) telephones. The private telephone service providers route these calls to the statewide Emergency Services IP Network (ESInet), which routes them to the King County Regional E-911 System. The County system then routes the call to the appropriate PSAP for caller interrogation and dispatch. It is the Regional E-911 System – as depicted in the grey box below – that is the subject of this report and the upcoming strategic plan. The Regional E-911 System does not have jurisdiction over either the private telecommunications providers or the interrogation and dispatch services of the PSAPs.



B. Public Safety Answering Points (PSAPs) in King County

PSAP	2015 911 Calls	Services* Provided: Agencies Served
Bothell Police Dept.	17,205	Police: Bothell Police Department, Lake Forest Park Police Department
Enumclaw Police Dept.	4,830	Police, Fire, EMS: Enumclaw Police Department, Enumclaw Fire Department
Issaquah Police Dept.	13,018	Police: Issaquah Police Department, North Bend Police Department, Snoqualmie Police Department
King County Sheriff	341,900	Police: King County Sheriff's Office — Includes cities of Burien, Covington, Kenmore, Maple Valley, Newcastle, Sammamish, SeaTac, Shoreline, Woodinville, and King County Airport
NORCOM	176,100	Police, Fire, EMS: Bellevue PD, Clyde Hill PD, Kirkland PD, Medina PD, Mercer Island PD, Bellevue FD, Bothell FD, Duvall FD, Eastside Fire & Rescue, Kirkland FD, Mercer Island FD, Redmond FD, Snoqualmie FD, King County Fire Districts #04, #16, #27, #36, #50, #51
Port of Seattle Police Dept.	11,743	Police, Fire, EMS: Normandy Park Police Dept., Port of Seattle Police Dept., Port of Seattle Fire Department
Redmond Police Dept.	20,794	Police: Carnation Police Department, Duvall Police Department, Redmond Police Department
Seattle Fire Dept.	102,235	Fire, Emergency Medical Services: Seattle Fire Department
Seattle Police Dept.	598,642	Police: Seattle Police Department
University of WA Police Dept.	3,057	Police: University of Washington Police Department
Valley Communications Center	440,581	Police, Fire, EMS: Algonia PD, Auburn PD, Black Diamond PD, Des Moines PD, Federal Way PD, Kent PD, Pacific PD, Renton PD, Tukwila PD, Valley Regional Fire Authority (Auburn, Algonia, Pacific), Kent Fire Regional Fire Authority (Kent, SeaTac, #37), Renton FD (Renton, #25, #40), South King Fire (Federal Way, #39, #26), Tukwila FD, King County Fire Districts #02, #11, #13, #17, #20, #43, #44, #46, #47
Washington State Patrol	276,426	Police: Washington State Patrol

* FD = Fire Department

PD = Police Department

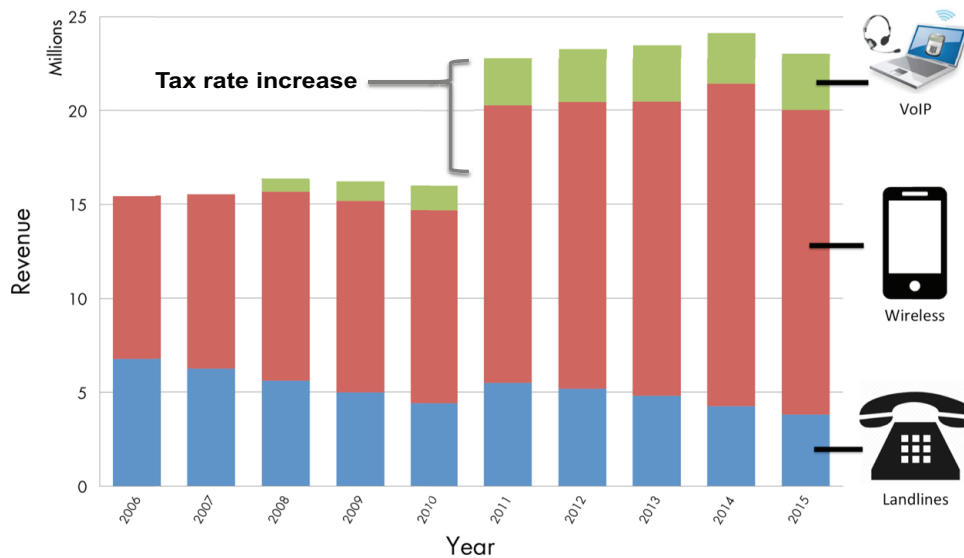
EMS = Emergency Medical Services

C. Funding

The E-911 Program Office is supported by excise taxes for land line, wireless and Voice-over-Internet phones. The E-911 Program Office distributes a portion of the excise taxes to the PSAPs in accordance with state statute to defray the costs of 911 call handling. The majority of PSAP costs are borne by the PSAP and their stakeholders.

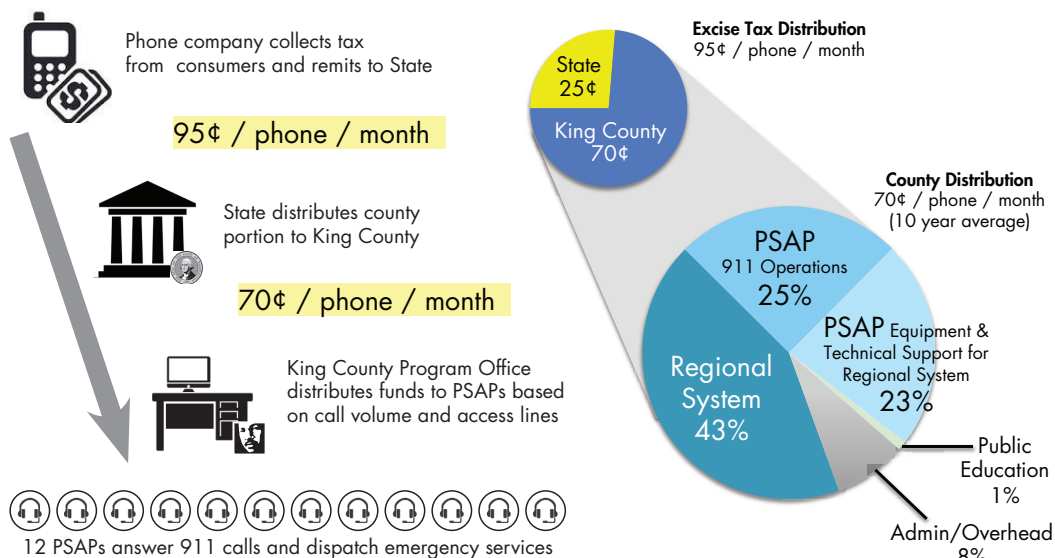
As illustrated below, excise tax revenue to the King County Regional E-911 system has remained relatively flat for the last ten years, with the exception of a rate increase in 2011. Funding from wireless and VoIP taxes is increasing while landline revenue is decreasing, but overall funding is steady.

King County E-911 Excise Tax Revenue



The following illustration shows the distribution of telephone excise taxes, with the state currently collecting 95¢ per phone per month. The state retains 25¢ of these excise taxes to pay for the statewide ESInet, and distributes 70¢ per phone per month to King County. The E-911 Program Office, in turn, distributes a portion of these funds to the PSAPs through an established formula. The PSAP portion goes toward PSAP equipment and technical support to connect with the regional system, as well as 911 operations. The bulk of PSAP costs (largely call taker salaries) are borne by the local PSAP jurisdictions.

Distribution of E-911 Excise Taxes



The above are estimates of current figures. Developing a baseline agreement among Regional E-911 System partners on the current situation regarding funding distribution and how this distribution should be illustrated should be an early step in discussions during strategic planning.

D. Current Challenges

King County, with its partner agencies, recognized (along with NENA and other national organizations) that the speed of transition to high-cost, technology-intensive NG911 technology is limited by current financial resources and staffing. The transition also presents significant increased complexity in program and project management as well as major security vulnerabilities that require advanced planning and expertise. All agreed that planning and prioritization were essential to successfully transition to NG911. (Next Generation 911 is a federal initiative to modernize existing, land line-based 911 technologies and upgrade systems to better work with wireless and Voice-over-Internet technologies.) In June 2015, the King County Auditor's Office published findings from its independent review of E-911 operations and recommended creation of a governance mechanism, establishment of a financial baseline of required spending and estimated revenues, and suspension of NG911 projects pending creation of an NG911 implementation plan and vetting of the plan with stakeholders.

E. Strategic Plan Scoping Process

Responding to proposed legislation from the Regional Policy Committee, the King County Council passed Ordinance 18139 in October 2015, creating a Strategic Plan Scoping Committee comprised of a Leadership Group and a supporting Project Coordination Team (*see membership lists on Acknowledgements page, earlier in this report*). The Committee includes representatives from King County, municipalities, PSAPs, and Fire Commissioners so that the priorities of the regional King County E-911 system can be identified in collaboration. The Scoping Committee was tasked with developing and recommending this Strategic Planning Process Report for transmittal to the Regional Policy Committee and County Council by May 31, 2016. The next phase of this 3-part process will be strategic planning, followed by a third phase that will be implementation of the strategic plan. Section 2 (below) delineates the content of the Strategic Planning Process Report as required by King County Ordinance 18139.

2 – Scoping Charge

From King County Ordinance 18139:

SECTION 1.

- C. The report shall **recommend a collaborative process to develop a King County E-911 strategic plan** to address priorities for the regional portions of the King County E- 911 system and guide the ongoing process for decision making, funding and implementing those priorities, including:
1. The **organizational structure** for the strategic planning process;
 2. A **timeline and milestones** for completion of the plan;
 3. A regular **reporting process** to project stakeholders;
 4. A recommended **work group or groups and team or teams**, or any combination thereof; and
 5. **Other issues** as identified by the committee.
- D. The report shall define the **roles, shared vision and measurable goals** of the regional King County E-911 system that is reflective of national best practices. In addition, the report shall also, at a minimum, address the **planning processes and questions needed to:**
1. Integrate with the state's E911 system and the responsibilities of local jurisdictions in their delivery of E-911 dispatch services;
 2. Develop a **ten-year technology investment strategy** for the regional King County E-911 system with tactics and a process for adapting to evolving technology and service conditions;
 3. Develop a **ten-year sustainable financial plan** for the regional King County E-911 system with tactics and a process for adapting to evolving financial conditions; and
 4. 4. Define an **ongoing decision-making or governance structure** for implementing and achieving the vision and goals of the regional King County E-911 system, including a conflict resolution process.

3 – Roles, Vision, Goals & Guiding Principles

A. Shared Vision — for the Regional E-911 System

Consistent with national best practices, King County's Regional E-911 System will be among the best in the country in terms of:

- Rapid and effective routing of requests for services
- Efficient use of public resources
- Effective deployment of evolving technology
- Adherence to the guiding principles (below)

B. Guiding Principles — for the Regional E-911 System

1. Process

- a. **Transparency** – Transparency in operations, procurement, decision-making, and financial management
- b. **Project Management Principles** – Keep current with industry standards in terms of project management and operating principles (PMP)
- c. **Collaboration** – Maintain a collaborative approach among all jurisdictions and project partners, including open and regular communication
- d. **Predictability** – Predictability in operations and decision-making
- e. **Advocacy** – Advocate at all levels to influence best practices and appropriate resources in the public and private sectors
- f. **Inclusion** – includes a broad array of voices

2. Finances

- a. **Fiscal Responsibility** – Equitable, transparent, and responsible fiscal management
- b. **Financial Sustainability** – Manage toward long-term financial sustainability
- c. **Cost Effective** – Leverage resources to provide the best possible services

3. Standards

- a. **National Best Practices** – Stay in step with national best practices in operations
- b. **Performance Metrics** – Track progress with specific and transparent metrics
- c. **Continuous Improvement** – Respond to recommendations, and continue to seek opportunities for improvement (including the King County Auditor's 2015 report)

C. Goals — for the Regional E-911 System

As part of the strategic planning process, develop a dashboard of outcome metrics to monitor progress toward these goals, to be in alignment with the guiding principles above.

1. **No Request Lost** – Never lose track of a request for assistance
2. **Prompt Response** – Promptly route and respond to every request for assistance to promote rapid dispatch
3. **Seamless System-wide Technology** – A county-wide system that is fully integrated and interoperable, minimizing transfers and ensuring reliability
4. **Meet or Exceed Industry Standards** – A county-wide system that meets or exceeds current industry standards and is continuously improved to adapt to evolving technology and needs
5. **Equity** – Equitable access to the E-911 system by all communities and individuals, recognizing and addressing the obstacles faced by specific groups.
6. **Secure, Resilient & Survivable** – A county-wide system that is secure, resilient, and survivable

D. Roles

Reflective of National Best Practices⁴, the existing roles of the E-911 Program Office and Public Safety Answering Points (PSAPs) are outlined below.

- Oversight
 - The King County Council has ultimate authority over the Regional E-911 System.⁵
 - The Regional Policy Committee considers regional issues referred from the County Council and makes recommendations back to the Council.
 - The King County Executive oversees County operations, including the E-911 Program Office that is within the Department of Executive Services. The Executive also refers legislation to Council and provides final signature (or veto) to legislation.
- Functions
 - E-911 Program Office provides E-911 routing network
 - PSAPs interrogate callers and dispatch assistance
- Governance
 - E-911 Program Office is within the County's Department of Executive Services, and reports to both the King County Executive and Council
 - PSAPs are within and governed by local stakeholders
- Funding
 - E-911 Program Office is supported by dedicated excise taxes
 - E-911 Program Office distributes a portion of excise taxes to PSAPs
 - Most PSAP costs are borne by the PSAP stakeholders

As noted in Section 4E, questions and issues for the strategic plan include regional E-911 governance, with organization chart, decision structure oversight, accountability, and responsibility. The evolving number and configuration of PSAPs is not part of the strategic planning process. Being locally governed and largely locally funded, the number and configuration of PSAPs is an ongoing process of local decisions by individual PSAPs and/or groups of PSAPs. The strategic plan will not include a top-down PSAP consolidation.

⁴ According to Federal Communications Commission Task Force on Optimal PSAP Architecture, January 29, 2016, "NG9-1-1 architecture can be customized to support almost any configuration of PSAP operations" (p. 24). "NG9-1-1-[sic] systems require that shared services networked across multiple PSAPs meet a series of well-defined conventional criteria. However, such criteria should be established by a state or regional governing body and include decision analysis, cost effectiveness, budgetary constraints and priorities, accountability, and a well-defined governance structure, subject to external audits and contractual obligations. Indeed, it is crucial that PSAP and first responder operational decisions remain at the local level" p. 27. — The King County E-911 Scoping Committee expects the Strategic Planning process to explore this topic further.

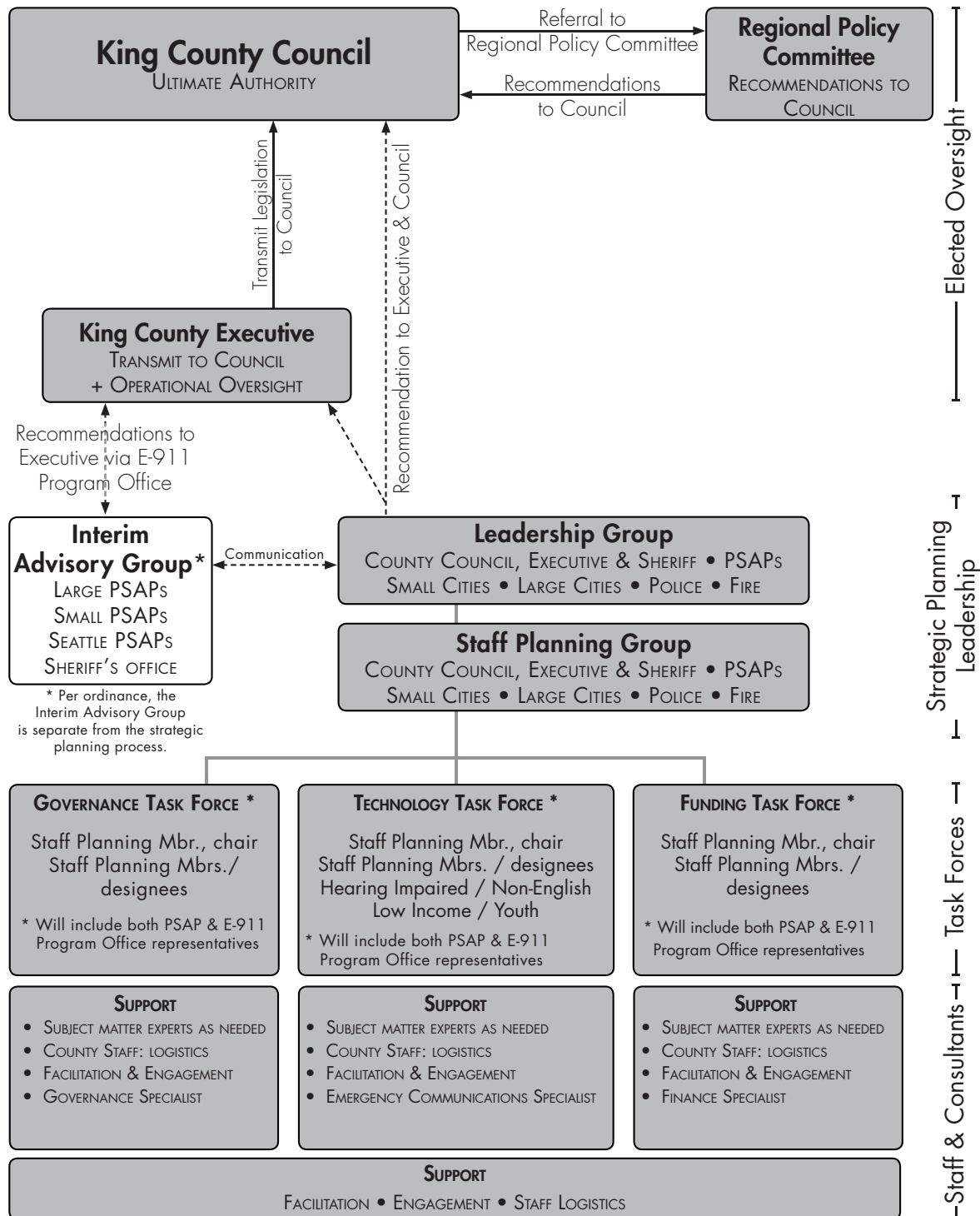
⁵ See e.g., RCW 38.52.510 and RCW 82.14B.020.

4 – Strategic Plan Scope

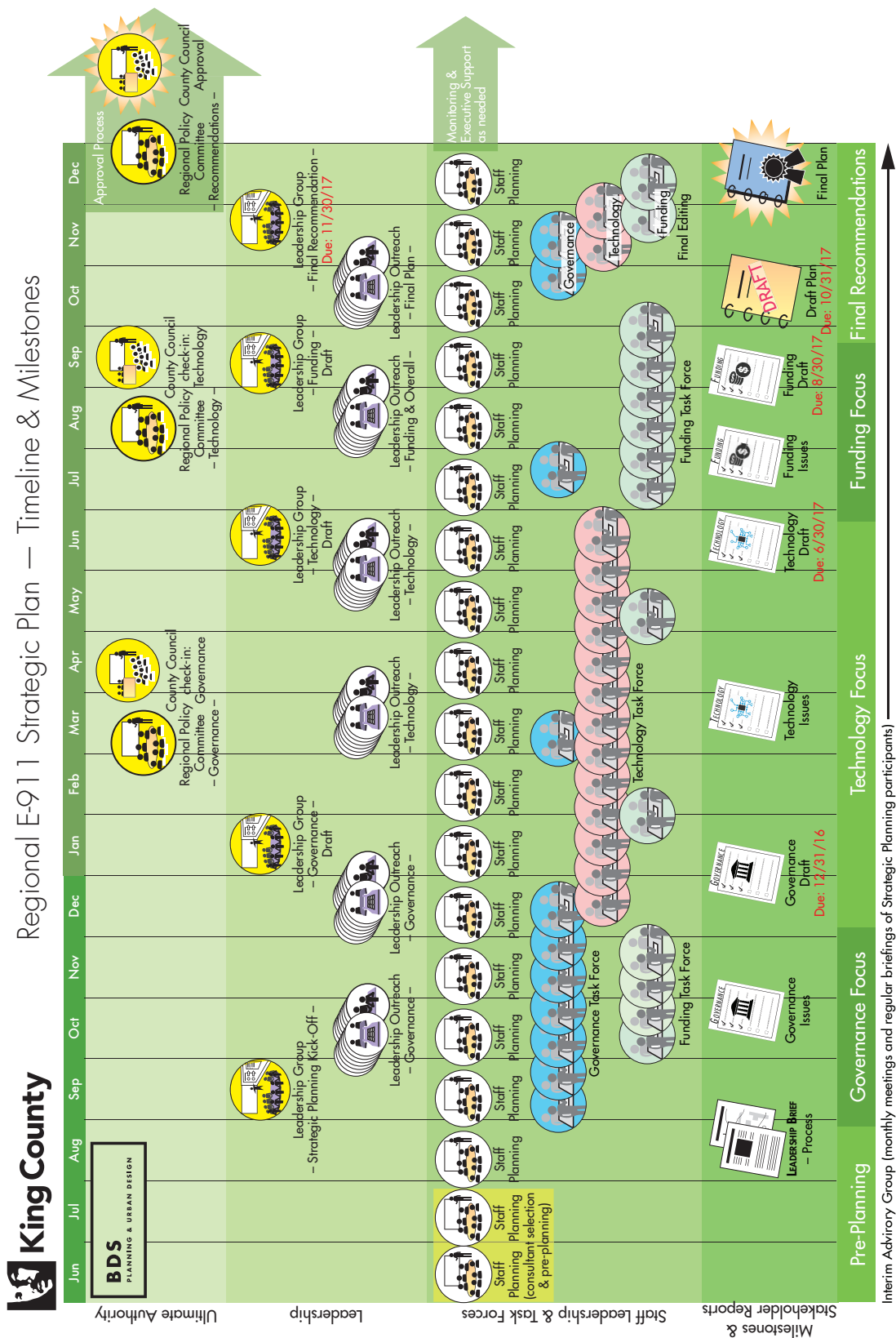
The following pages outline the organizational structure; timeline and milestones; stakeholder reporting; work groups and teams; and key questions and issues for strategic planning.

A. Organizational Structure

King County Regional E-911 Strategic Planning Structure



B. Timeline & Milestones



C. Stakeholder Reporting

The King County Regional E-911 Strategic Planning process will be transparent and inclusive. Most materials will be distributed to interested parties, and available electronically to anyone who is interested. At the same time, due to the sensitive nature of emergency communications, there may be information of secure, confidential, and/or proprietary nature that will be redacted before distribution.

The strategic planning process will include regular one-on-one briefings between the project's Leadership Group and Staff Planning Group. The process will also include regular briefings by the Interim Advisory Group to strategic planning participants. It will also be helpful to project coordination that many individuals will serve on several of the groups illustrated on the organization chart.

At minimum, interim reports to project stakeholders will include:

1. **Strategic Planning Process.** This briefing document for the Leadership Group's September meeting will outline the strategic planning process, with key milestones and dates.
2. **Governance Issues.** This briefing document will outline key governance issues and options to be resolved during the process. It will be used to stimulate discussion and deliberation.
3. **Draft Governance Recommendations.** The Governance Task Force will draft preliminary recommendations for discussion and feedback by the Staff Planning Group and Leadership Group. This preliminary document will provide guidance for technology and finance discussion, and be modified later in response to those discussions. Due: 12/31/16.
4. **Technology Issues.** This briefing document will outline key technology issues and options to be resolved during the process. It will be used to stimulate discussion and deliberation.
5. **Draft Technology Recommendations.** The Technology Task Force will draft preliminary recommendations for discussion and feedback by the Staff Planning Group and Leadership Group. This preliminary document will provide guidance for finance discussion, and be modified later in response to those discussions. Due: 6/30/17.
6. **Finance Issues.** This briefing document will outline key finance issues and options to be resolved during the process. It will be used to stimulate discussion and deliberation.
7. **Draft Finances Recommendations.** The Finance Task Force will draft preliminary recommendations for discussion and feedback by the Staff Planning Group and Leadership Group. This preliminary document will initiate review and alignment of all Task Force recommendations in advance of a full draft strategic plan. Due: 9/30/17.
8. **Draft Strategic Plan.** The Staff Planning Group will recommend a full draft of the Strategic Plan to the Leadership Group for discussion and feedback. Due: 10/31/17.
9. **Final Strategic Plan.** The Leadership Group will forward the final King County Regional E-911 Strategic Plan to the County Executive and Council. Due: 12/31/17.

D. Work Groups & Teams for Strategic Plan

Leadership Group

Charge

The Leadership Group will recommend a Strategic Plan to the King County Executive and King County Council.

Composition

To be appointed by the County Executive; and confirmed by the County Council - no alternates will be allowed.

King County Council	3
Seattle City Council	2
Sound Cities	3
Bellevue Council	1
Fire District	1
King County Sheriff	1
King County Executive	1
Big PSAPs	1
Small PSAPs	1
Seattle PSAPs	1
E-911 Program Office (ex-officio; non-voting)	0
	15

Timing

This group will hold approximately 5 meetings between September 2016 and December 2017.

Meetings

Open meetings, but not formally noticed and without public testimony.

Decisions

Decisions will be by consensus as much as possible. Absent consensus, decisions can be made by a vote of 80% of those members present at the meeting.

Outreach

Input will be provided by the Staff Planning Group and Task Forces, as well as regular one-on-one check-ins throughout the process.

Support

- King County staff for logistics
- Facilitation / leadership outreach consultant

Staff Planning Group

Charge

The Staff Planning Group will support the Leadership Group by preparing recommendations and/or decision options for each of the Key Questions for Strategic Planning. The group will meet approximately monthly throughout the Strategic Planning process, including supervising the work of content Task Forces.

Composition

To be appointed by the County Executive; and confirmed by the County Council - no alternates will be allowed.

One representative each for each Leadership Group constituency:

King County Council	1
Seattle City Council	1
Sound Cities	1
Bellevue Council	1
Fire District	1
King County Sheriff	1
King County Executive	1
Big PSAPs	1
Small PSAPs	1
Seattle PSAPs	1
E-911 Program Office (full member)	1
	11

Timing

The Staff Planning Group will meet approximately monthly between June 2016 and December 2017, totaling about 18 meetings total.

Meetings

Open meetings, but not formally noticed and without public testimony.

Decisions

Decisions will be by consensus as much as possible. Absent consensus, the Staff Planning Group will refer options to the Leadership Group for deliberation and guidance.

Outreach

Input through content Task Forces, stakeholders, and substance experts as needed, as well as regular one-on-one check-ins with Leadership Group members throughout the process.

Support

- King County staff for logistics
- Facilitation / leadership outreach consultant

Governance Task Force

Charge

Research, deliberate, and recommend a governance structure for the Regional E-911 System, including how the Regional E-911 system will integrate with the state E-911 system and local E-911 dispatch services.

Composition (appointed by Staff Planning Group)

- Chair - from Staff Planning Group
- Staff Planning Group members or designees *

* Will include PSAP and E-911 Program office representatives. Task Force membership will be limited to members of the Staff Planning Group or their designees (up to one designee each). This means up to 11 members.

Support

- Stakeholders and substance experts as needed
- King County staff for logistics
- Facilitation / leadership outreach consultant
- Best practices/research consultant
- Emergency communications specialist, with regional governance expertise as consultant

Participation Requirements

The Governance Task Force members should be authorized representatives of Leadership constituencies, and make a commitment to attendance.

Timing

The group will meet frequently in the fall of 2016, periodically in winter/spring 2017, and frequently for a few weeks in the summer of 2017. Probably 6-8 meetings in all, but potentially more.

Decisions

Task Forces will make decisions by consensus; in the absence of consensus the Task Force will refer options to the Staff Planning Group for a decision.

Meetings

Open meetings, but not formally noticed and without public testimony.

Outreach

Task Forces will be in continuous communication with the Staff Planning Group and provide information for one-on-one check-ins with Leadership Group members throughout the process.

Technology Task Force

Charge

Research, deliberate, and recommend a 10-year Technology Investment Strategy for the Regional E-911 System.

Composition (appointed by Staff Planning Group)

- Chair - from Staff Planning Group
- Staff Planning Group members or designees *
- Hearing Impaired / Non-English / Low-income / Youth representatives *

* Will include PSAP and E-911 Program office representatives. Task Force membership will be limited to members of the Staff Planning Group or their designees (up to one designee each), plus representatives of special needs groups listed above. This means up to 11 members plus special needs representatives.

Support

- Stakeholders and substance experts as needed
- King County staff for logistics
- Facilitation consultant
- Emergency communications technology consultant(s)

Participation Requirements

Technology Task Force members should have knowledge of and stature to speak for constituent needs and make a commitment to attendance.

Timing

The group will meet periodically in late-summer / early-fall 2016; frequently late-fall 2016 through spring 2017, periodically in summer, and frequently for a few weeks in the fall of 2017. Probably 10-12 meetings in all, but potentially more.

Decisions

Task Forces will make decisions by consensus; in the absence of consensus the Task Force will refer options to the Staff Planning Group for a decision.

Meetings

Open meetings, but not formally noticed and without public testimony. This Task Force may need to close some meetings when topics of secure or sensitive nature are to be discussed.

Outreach

Task Forces will be in continuous communication with the Staff Planning Group and provide information for one-on-one check-ins with Leadership Group members throughout the process. Consideration on technology issues will be given to organizations and communities with specific needs and/or interests.

Finance Task Force*Charge*

Research, deliberate, and recommend a 10-year Sustainable Financial Plan for the Regional E-911 System.

Composition (appointed by Staff Planning Group)

- Chair - from Staff Planning Group
- Staff Planning Group members or designees *

* Will include PSAP and E-911 Program office representatives. Task Force membership will be limited to members of the Staff Planning Group or their designees (up to one designee each). This means up to 11 members.

Support

- Stakeholders and substance experts as needed
- King County staff for logistics
- Facilitation / leadership outreach consultant
- Best practices/research consultant
- Finance consultant (as needed)

Participation Requirements

Finance Task Force members should be authorized representatives of Leadership Group constituencies, and make a commitment to attendance.

Timing

The group will meet periodically from fall 2016 through spring 2017, and frequently in summer/fall 2017. Probably 6-8 meetings in all, but potentially more.

Decisions

Task Forces will make decisions by consensus; in the absence of consensus the Task Force will refer options to the Staff Planning Group for a decision.

Meetings

Open meetings, but not formally noticed and without public testimony.

Outreach

Task Forces will be in continuous communication with the Staff Planning Group and provide information for one-on-one check-ins with Leadership Group members throughout the process.

Stakeholders for Strategic Planning process*Group – Role*

County Council	Governance: Ultimate Authority
Regional Policy Committee	Governance: Recommendations to Council
County Executive	All Areas: Management of operations; referral to Council
Program Office	All Areas: Regional System operations
PSAPs	All Areas: Connection to System; Interrogation; Dispatch
Cities	Operations / Finance: Deployment / PSAP funding
Special Districts	Operations / Finance: Deployment / PSAP funding
State	Operations / Finance: Routing / Excise tax collection
Hearing impaired	Information & Input: Special needs
Non-English speakers	Information & Input: Special needs
Low-income	Information & Input: Special needs
Youth	Information & Input: Special needs
Public	Information & Input

Support for Strategic Planning process*Group – Role*

County staff	Logistics
--------------	-----------

Consultants (as needed)*Type – Role – Timing*

Facilitator / Process Manager (local)	Facilitation of Leadership Group; Staff Planning Group; Task Forces	Q3 2016 - Q4 2017 (hire ASAP)
Leadership Outreach (local)	One-on-one engagement of leadership	Q3 2016 - Q4 2017 (hire ASAP)
Governance (national)	Best practices; recommendations	Q3-Q4 2016 + (maybe) Q3 2017 (hire ASAP)
Technology (national)	Best practices; recommendations	Q3 2016 - Q3 2017 (hire by September 2016)
Finance (national)	Best practices; recommendations	Q3 2017 - Q4 2017 (hire by Q2 2017)

E. Questions and Issues to be addressed during Strategic Planning

Integrate with State System & Local Responsibilities

These questions are included under Governance and Technology

Decision-making or Governance Structure

Define an ongoing decision-making or governance structure for the Regional E-911 System, including organization chart; decision structure; accountability; responsibility; and conflict resolution process.

Governance Goals (based on Guiding Principles):

- Equity - especially regional equity
- Transparency
- Project Management Principles
- Collaboration
- Predictability
- Fiscal responsibility
- Financial sustainability
- Cost effective
- Performance metrics
- Continuous improvement (e.g., Lean and Lean/Six Sigma Management)
- Public accountability
- Consensus

Best Practices Questions (inputs to support strategic planning decisions):

- What are others doing for governance of regional E-911 systems with multiple operating groups?

Baseline Questions (inputs to support strategic planning decisions):

- What is the current governance structure (organization chart; decision structure oversight; accountability; responsibility, conflict resolution process)?
- What are the governance lessons from the 2015 King County Auditor's report on E-911 operations?

Strategic Governance Questions (to be answered during strategic planning to guide future action):

- G1. What is the definition of the King County Regional E-911 System?
- G2. What is the management structure for the King County Regional E-911 System, in terms of authority, oversight, operations, accountability, responsibility, and performance monitoring?
- G3. What is the major decision-making structure for the King County Regional E-911 System, including process management, research, input, and authority?
- G4. What is the conflict resolution process for the King County Regional E-911 System?
- G5. What is the stakeholder engagement structure for the King County Regional E-911 System, including input into decisions, reporting, and performance monitoring?

Off the Table:

- The evolving number and configuration of Public Safety Answering Points (that are locally governed and largely locally funded) is an ongoing process of local decisions by individual PSAPS and/or groups of PSAPs. This plan will not include a top-down PSAP consolidation.

10-year Technology Investment Strategy

Determine a King County technology standard that is based on national models and local expectations, as well as a 10-year technology investment strategy to stay current with new models.

Technology Goals (based on Guiding Principles):

- No request lost
- Scalability
- Inter-operability
- Operational impact (tie to technology investment)
- Flexible
 - Open source versus proprietary
 - Leverage existing investments
 - Commercial Off The Shelf Software (COTS) versus custom software
- Seamless system-wide technology (limit transfers)
- Survivability: resilient, redundant, secure, and geographically diverse, including disaster planning drills

Best Practices Questions (inputs to support strategic planning decisions):

- Manage, review and implement in alignment with national standards and best practices (i.e. (e.g. NENA, APCO, CALEA, PMP, FCC, USDOT, NFPA))
- Comprehensive review of case studies.

Baseline Questions (inputs to support strategic planning decisions):

- What relevant technology is in use within the King County Regional E-911 System now?
- What are the technology lessons from the 2015 King County Auditor's report on E-911 operations?

Strategic Technology Questions (to be answered during strategic planning to guide future action):

- T1. What is the technology vision for the King County Regional E-911 System, in terms of the technology's purpose, evolution, and investment approach?
- T2. What are the technology requirements for integrating with the state's E-911 system, and for local jurisdictions to connect to the regional E-911 system?
- T3. What is the ongoing decision process for technology investments, including options, tradeoffs, priorities, budgets, and schedules?
- T4. What are the ongoing performance metrics for technology in the King County Regional E-911 System, including the performance of the system, vendors, and local partners?
- T5. What are the security requirements for the King County Regional E-911 System, including protection of the system, individual privacy, and proprietary information?

Off the Table:

- Nothing

10-year Sustainable Financial Plan:

Establish a 10-year sustainable financial plan that is in line with national best practices, local expectations, and realistic funding projections.

Finance Goals (based on Guiding Principles):

- Equity
- Transparency - full disclosure in reporting how funds are spent
- Advocacy - especially advocacy for additional resources
- Fiscal responsibility - most effective and efficient use of fiscal resources
- Financial sustainability
- Cost effective
- Standards
- Performance metrics
- Risk Management & Reserve Policy (inclusive of potential for a catastrophic event)

Best Practices Questions (inputs to support strategic planning decisions):

- What are cities, counties, PSAPs doing with respect to financial management and reporting (case studies)?
- How is workload and performance measured?
- How are funds collected, budgeted, prioritized and distributed?

Baseline Questions (inputs to support strategic planning decisions):

- How is funding distributed now?
- What are projections for future funding?
- What are the financial lessons from the 2015 King County Auditor's report on E-911 operations?

Strategic Finance Questions (to be answered during strategic planning to guide future action):

- F1. What are the procedures and processes for forecasting, reporting, auditing, and operations related to King County Regional E-911 System revenue and expenditures?
- F2. What are the funding needs and revenue strategies for the King County Regional E-911 System, including NG911 upgrades and keeping the system up to date over time?
- F3. What are the stakeholder reporting requirements related to the King County Regional E-911 System finances, including revenue, expenditures, efficiency, and effectiveness?
- F4. What are the investment management policies for the King County Regional E-911 System related to forecasting, investments, reserves, and contingencies?

Off the Table:

- None so far

Appendix of Initial Questions and Issues (to be used as a starting point)

The King County Regional E-911 Scoping Committee (Leadership Group and Project Coordination Team) brainstormed the following questions during the scoping process. They informed the Strategic Questions in the previous section, and are included here as a reminder and reference during strategic planning.

Decision-making or Governance Structure

Stakeholders

- Who are the stakeholders in the E-911 system?
- What options are there for involving all relevant stakeholders in Governance
- How do we ensure regional equity?

Decisions

- Who makes - and who informs - the decisions about the Regional E-911 routing system, i.e., the system operated by the Program Office to route 911 calls to the correct PSAP?
- Who makes decisions about funding distribution (short-term and ongoing)?
- What is the ongoing decision-making structure for keeping the Regional E-911 system current?
- Who makes the decisions about the minimum threshold required of PSAPs to connect to the Regional E-911 system? How often do these decisions need to be made?

Oversight & Monitoring

- What are regional E-911 governance options based on national surveys of similar oversight authorities and other similar models whether locally or nationally (organization chart; decision structure oversight; accountability; responsibility, conflict resolution process)?
- Who sets budget policy, approves the long-term technology work plans?
- How are disputes or differences of opinion resolved?
- How will use of resources be monitored over time?

Operations

- What are the legalities surrounding governance in regard to the RCWs?
- How do decision-makers stay informed and provide oversight on strategic plan implementation, and ensure accountability for programs projects, finances, technology and other areas of performance?
- How is liability for actions protected?
- How do we ensure ongoing collaboration, plus open and regular communication?

10-year Technology Investment Strategy

Decisions

- How are the options, risks, pros, cons, and costs of proposed projects evaluated?
- How are projects prioritized to determine how projects rank in terms of priority for both funding and implementation?

Operations

- What vendor performance metrics should be used and how should vendors be managed/overseen? (Vendors of products may not Manage Projects - violation of PMP standards)
- How will we assure Technology vendor-neutral approach?
- What is the purpose for which technology is intended?
- How do we ensure efficient routing, minimizing transfers, and directing calls (and funding) to the appropriate PSAP?

- How is ownership of data/intellectual property handled particularly with responses to public disclosure requests?
- What are the guidelines for encouraging development and leveraging of shared technology?
- What core services should technology provide?
- How should we address social media and email requests for services?

Budgeting

- How is the Technology Budget established including needs analysis, funding availability, priority?
- How are Technology projects budgeted in terms of using funds such as Capitol Projects, Equipment Replacement, Emergency/Contingency Funds, etc.?
- Which technology should be paid for by the E-911 excise taxes pay for? (Where do other funding sources come in?) What are the legal limitations regarding the use the E-911 excise tax?

Requirements

- What are the minimum technology requirements of system participants?
- What are the requirements for integrating with the state's E-911 system?
- What are the responsibilities of local jurisdictions in their delivery of E-911 dispatch services?

10-year Sustainable Financial Plan:

Process

- What are the procedures, policies and processes for forecasting, reporting, auditing and operations related to revenue and expenditures overall?
- How do we ensure periodic reports on performance metrics?

Efficiency

- How shared services, resources and shared strategies can be implemented to effectively implement NG-911 and other 911-related technology?
- How is effectiveness and efficiency at all levels encouraged, rewarded and implemented throughout the entire E-911 system?
 - Equitable, efficient, and standards-based funding distribution plan
 - What are the legal or other limitations related to use of E-911 funds?
- Can the E911 Program Office partner on other County and local government projects to cut costs?

Budgeting

- What total funds will be needed to achieve strategic goals and initiatives, maintain operations and assure system is reliable and redundant?
 - What are the potential sources for funds?
 - Sensitivity analysis in funding forecast
 - 10-year timeline including funding cycles (a rolling plan that is evolving and kept up-to-date)
- How do we consider all finances and costs (not just technology)?

Investments

- What are the financial reporting protocols, audit schedule, performance metrics that will assure transparency, accountability and clean audits?
- What are the proactive investment strategies in terms of accomplishing strategic goals, updating and refreshing technology, and assuring capacity to handle all risks and contingencies?
- What are the current policies on reserves and what reserves exist in whatever form?
- How is risk assessed and funding set aside for contingencies (e.g. reserves)?



LEADERSHIP GROUP

Councilmember Jennifer Robertson
CITY OF BELLEVUE

Mayor Liz Reynolds
CITY OF ENUNCLAW

Councilmember Tola Marts
CITY OF ISSAQUAH

Executive Dow Constantine
KING COUNTY

Councilmember Reagan Dunn
KING COUNTY

Councilmember Kathy Lambert
KING COUNTY

Councilmember Claudia Balducci
KING COUNTY

Sheriff John Urquhart
KING COUNTY

Executive Director Tom Orr
NORCOM

Commander Erik Scairson
REDMOND POLICE DEPARTMENT

Mayor Denis Law
CITY OF RENTON

Councilmember Lorena González
CITY OF SEATTLE

Council President Bruce Harrell
CITY OF SEATTLE

Captain Ronald Rasmussen
SEATTLE POLICE DEPARTMENT

Commissioner Tim Osgood
WOODINVILLE FIRE AND RESCUE

Jody Miller (non-voting)
KING COUNTY EMERGENCY MANAGEMENT

PLANNING GROUP

Kathy Lombardo, Co-Chair
KING COUNTY, E-911 PROGRAM OFFICE

Lora Ueland, Co-Chair
VALLEY COMMUNICATIONS CENTER

Chad Barnes
CITY OF BELLEVUE

Commander Chris Wilson
ISSAQUAH POLICE DEPARTMENT

Diane Carlson
KING COUNTY EXECUTIVE'S OFFICE

Lise Kaye
KING COUNTY COUNCIL STAFF

Chief Patti Cole-Tindall
KING COUNTY SHERIFF'S OFFICE

Marilynne Beard
CITY OF KIRKLAND (SOUND CITIES)

Edie Gilliss (Stacey Jehlik, Interim)
CITY OF SEATTLE MAYOR'S OFFICE

Captain Ronald Rasmussen
SEATTLE POLICE DEPARTMENT

Commissioner Tim Osgood
WOODINVILLE FIRE AND RESCUE

Meg Goldman (non-voting)
KING COUNTY EXECUTIVE SERVICES

TASK FORCE CHAIRS

Diane Carlson, Governance
KING COUNTY EXECUTIVE'S OFFICE

Edie Gilliss (Stacey Jehlik, Interim), Governance
CITY OF SEATTLE MAYOR'S OFFICE

Bill Kehoe, Technology
KING COUNTY INFORMATION TECHNOLOGY

Chelo Picardal, Technology
CITY OF BELLEVUE

Marilynne Beard, Finance
CITY OF KIRKLAND (SOUND CITIES)

Tom Koney, Finance
KING COUNTY EXECUTIVE SERVICES

PROCESS BRIEF

Introduction

This document outlines the process the Planning Group and Task Forces will use to develop a King County E-911 strategic plan that addresses priorities for the regional portions of the E-911 system and guides the ongoing process for decision making, funding and implementing those priorities.

Five Leadership Group Meetings



Deliverables

Process Brief | Due 9/20/16
This briefing document for the Leadership Group's September meeting will outline all aspects of the strategic planning process, including decision points for the three Task Forces, the Planning Group and the Leadership Group - with key milestones and dates. Plans to address and make decisions about E-911 Program Office operational issues above and beyond technology, finance and governance such as training and public education will be included in this brief.



Governance, Finance, Technology & Operations Issue Brief | Due 11/14/16

This briefing document will outline key governance, technology, and finance issues to be resolved during the process. It will include a needs assessment for governance, technology, finance, and operational issues and will be used to stimulate discussion and deliberation.



1st Draft Technology & Operations Recommendations | Due 3/31/17

The Technology Task Force will draft preliminary recommendations for discussion and feedback by the Planning Group and Leadership Group. This preliminary document will provide guidance for finance discussion, and will be modified in the 2nd draft recommendation based on feedback from the Finance Task Force. Deliverables may include: technology roadmap, technology recommendations, system design recommendations, location recommendations, refresh cycles, a proposed implementation cycle consistent with the current refresh and day-to-day business cycle.



2nd Draft Technology & Operations Recommendations | Due 6/30/17

The Technology Task Force will propose final technology recommendations that will provide the underpinnings for the development of the Finance Task Force recommendations, including specific sample RFP scope of work for the new technology.



Draft Finances Recommendations | Due 8/31/17

The Finance Task Force will draft preliminary recommendations for discussion and feedback by the Planning Group and Leadership Group. This preliminary document will initiate review and alignment of all Task Force recommendations in advance of a draft strategic plan.



Draft Governance Recommendations | Due 8/31/17

The Governance Task Force will draft preliminary recommendations for discussion and feedback by the Planning Group and Leadership Group.



Draft Strategic Plan | Due 10/31/17

The Planning Group will recommend a full draft of the Strategic Plan (including draft implementation plan), synthesizing the work and recommendations of all three Task Forces to the Leadership Group for discussion and feedback.



Final Strategic Plan | Due 12/31/17

The Leadership Group will forward the final King County Regional E-911 Strategic Plan to the County Executive and Council.



PROCESS BRIEF: GOVERNANCE TASK FORCE

Goal and Charge

Research, deliberate, and recommend a governance structure for the Regional E-911 System, including how the Regional E-911 system will integrate with the state E-911 system and local E-911 dispatch services. Define an ongoing decision-making or governance structure for implementing and achieving the vision and goals of the regional King County E-911 system, including a conflict resolution process.

Statement of Strategic Questions

Best Practices Questions (inputs to support strategic planning decisions):

- What are others doing for governance of regional E-911 systems with multiple operating groups?

Baseline Questions (inputs to support strategic planning decisions):

- What is the current governance structure (organization chart; decision structure oversight; accountability; responsibility, conflict resolution process)?
- What are the governance lessons from the 2015 King County Auditor's report on E-911 operations?

Strategic Governance Questions:

- G1. What is the definition of the King County Regional E-911 System?
- G2. What is the management structure for the King County Regional E-911 System, in terms of authority, oversight, operations, accountability, responsibility, and performance monitoring?
- G3. What is the major decision-making structure for the King County Regional E-911 System, including process management, research, input, and authority?
- G4. What is the conflict resolution process for the King County Regional E-911 System?
- G5. What is the stakeholder engagement structure for the King County Regional E-911 System, including input into decisions, reporting, and performance monitoring?

Off the Table:

- The evolving number and configuration of Public Safety Answering Points (that are locally governed and largely locally funded) is an ongoing process of local decisions by individual PSAPs and/or groups of PSAPs. This plan will not include a top-down PSAP consolidation.

Timeline and Milestones

Meeting 1: Current Governance Issues (Fall 2016)

- Review FCC Report and County audit governance findings.
- Identify main issues that must be addressed during the process.
- Review existing governance framework/structure
 - » What are the current statutory responsibilities, roles, and authority?
 - » Review existing governance issues at State, County, and PSAP levels.
- Discuss relation of other task forces' work with governance and align schedule and scope.

Meeting 2: Governance Structures (Fall 2016)

- 911 models in other regions and states
- King County or Regional Models for other services
- Examples:
 - » Growth Management Planning Council
 - » PSERN
 - » Others

Meeting 3: What do you want to Govern? (Fall 2016)

Including feedback from other Task Forces, Planning Group, and Leadership Group begin discussion of 911 functions how they should be governed, at what level, and by whom.

- Revenue
- Budget
- Operations
- Capitol
- Standards and technology

Meetings 4-6: Development of Recommendations on Governance (Summer 2017)

- Authority over what functions
- Representation of entities and jurisdictions
- Voting

Meeting 7: Final Recommendation (Fall 2017)

Final Product includes:

- Recommended governance model
- Implementation plan and associated timeline.

PROCESS BRIEF: TECHNOLOGY & OPERATIONS TASK FORCE

Goal and Charge

Research, deliberate, and recommend a 10-year Technology Investment Strategy for the Regional E-911 System that meets the following Goals (from Scoping process):

1. No request for emergency service be lost.
2. Prompt responses to all requests for emergency service.
3. Seamless system-wide technology that minimizes transfers and is fully integrated and interoperable.
4. Meet or exceed industry standards on a continuing basis.
5. Provide equitable access to the E-911 system by all communities & individuals.
6. A county-wide system that is secure, resilient and survivable.

Statement of Strategic Questions

Best Practices Questions (inputs to support strategic planning decisions):

- Manage, review and implement in alignment with national standards and best practices (e.g. NENA, APCO, CALEA, PMP, FCC, USDOT, NFPA)
- Comprehensive review of case studies.

Baseline Questions (inputs to support strategic planning decisions):

- T1. What is the technology vision for the King County Regional E-911 System, in terms of the technology's purpose, evolution and investment approach?
- T2. What are the technology requirements for integrating with the state's E-911 system, and for local jurisdictions to connect to the regional E-911 system?
- T3. What is the ongoing decision process for technology investments, including options, tradeoffs, priorities, budgets, and schedules?
- T4. What are the ongoing performance metrics for technology in the King County Regional E-911 System, including the performance of the system, vendors, and local partners?
- T5. What are the security requirements for the King County Regional E-911 System, including protection of the system, individual privacy and proprietary information?

Timeline and Milestones

Meetings 1-3: Key Technology & Operational Issues (September-October 2016)

Identifying the key technology and operational issues that will need to be addressed in the technology and operational recommendations process. The Task Force will accomplish this work through a combination of activities including:

1. IXP to meet with each of the PSAPs to gather and summarize insights on their current and future technical and operational requirements.
2. State 9-1-1 Program outreach to gain a clear understanding of their system deployment strategies, schedules, technical requirements and operational/cost obligations.
3. Explore industry trends, standards, and best practices.
4. Consult with King County Information Technology and the E-911 Program Office about requirements, as well as existing standards and policies.

Meetings 4-11: 1st Draft Technology and Operational Recommendations (November 2016 – March 2017)

Drafting preliminary recommendations with sufficient detail to allow the Finance and Governance Taskforces to begin their work establishing their detailed analysis and recommendations. The Task Force will accomplish this work through a combination of activities including:

1. Outreach to other regional 9-1-1 systems serving multiple PSAPs.
2. Informational presentations by industry vendors.
3. IXP development of a 'straw-man' technology and operational framework to be reviewed and refined with the Task Force.
4. Review draft recommendations with King County Information Technology and the E-911 Program Office to ensure alignment with technology standards and policies.

Meetings 12-15: 2nd Draft Technology and Operational Recommendations (April – June 2017)

Drafting revised recommendations incorporating feedback from the Planning Group, Leadership Group, and the other Taskforces. Draft will expand the level of detail needed so that acquisition, implementation and operational costs can be estimated for use by the Finance Task force. The 2nd Draft will also include sample RFP scope of work information for a subsequent implementation cycle for the recommended technology and operational approaches. The Task Force will accomplish this work through a combination of activities including:

1. Review and follow-up discussions with the Planning and Leadership Groups, as well as the other Taskforces.
2. Maintain contact and interaction with the State to closely monitor their ESINet deployment progress.
3. Gather cost data and experiences from similar regional systems.
4. Direct outreach to industry vendors and comparable jurisdictions for comparable budgetary information.
5. Review final recommendations with King County Information Technology and the E-911 Program Office to ensure alignment with technology standards and policies.

PROCESS BRIEF: FINANCE TASK FORCE

Goal and Charge

This process brief lays out a preliminary work program for the Finance Task Force. The Finance Task Force is charged with the research, deliberation, and recommendation of a 10-year Sustainable Financial Plan for the Regional E-911 System.

Statement of Strategic Questions

Best Practices Questions (inputs to support strategic planning decisions):

- What are cities, counties, PSAPs doing with respect to financial management and reporting (case studies)?
- How is workload and performance measured?
- How are funds collected, budgeted, prioritized and distributed?

Strategic Finance Questions

- F1. What are the procedures and processes for forecasting, reporting, auditing, and operations related to King County Regional E-911 System revenue and expenditures?
- F2. What are the funding needs and revenue strategies for the King County Regional E-911 System, including NG911 upgrades and keeping the system up to date over time?
- F3. What are the stakeholder reporting requirements related to the King County Regional E-911 System finances, including revenue, expenditures, efficiency, and effectiveness?
- F4. What are the investment management policies for the King County Regional E-911 System related to forecasting, investments, reserves, and contingencies?

Timeline and Milestones

The work program will consist of three general phases of work for the Task Force. These phases are called out to provide an illustration of how the Task Force will proceed through its charge. These are summarized below.

- **Clarity Phase.** This portion of the work program will review the principles and key questions raised during the scoping process. The broader objective of the phase is for the Task Force members to gain a shared understanding of current financial management issues. Task Force members will chiefly be consuming information provided by the consultant team and E911 Program Office; however, task force support staff will respond to Task Force members' questions and needs for information.
- **Focus Phase.** During this portion of the work program, Task Force members will discuss and identify key issues and problems that they think need to be remedied. They will also discuss and define what are the key elements (or criteria) of a 10-Year Sustainable Financial Plan for the Regional E-911 System. Task force support staff will respond to Task Force members' questions and needs for information.
- **Strategy Phase.** During this phase of the work, Task Force members will suggest and evaluate potential actions for the E-911 Financial Plan. They will deliberate and seek consensus on a range of strategies and actions needed to implement the 10-Year Sustainable Financial Plan for the Regional E-911 System.

Meeting 1: Task Force Charge and E-911 Financial Information (October 2016)

- » Task Force introductions, roles, charge, and work program
- » Presentation and Q&A: State of the E-911 Program
- » Discussion: Task Force discussion on key issues and relevant history

Meeting 2: Best Management Practices and Information Follow-up (October/November 2016)

- » Presentation and Q&A: Best Management Practices from King County and other E-911 Offices in Washington
- » Discussion: Task Force discussion on key issues and problems

Meetings 3-4: Defining Elements of a Sustainable Financial Plan (Winter 2016/17)

- » Presentation: Check in with Technology and Governance Task Forces
- » Discussion: Task Force identification of key objectives, elements, and/or criteria

Meetings 5-6: Identify, Refine, and Evaluate Potential Strategies and Actions (Spring/Summer 2017)

- » Discussion: Task Force identification of strategies and actions
- » Production: Prepare draft 10-Year Sustainable Financial Plan based on suite of technologies identified by 1st draft of Technology & Operations recommendations

Meeting 7: Final Recommendations (Summer 2017)

- » Discussion: Review draft 10-Year Sustainable Financial Plan with implementation plan and associated timeline
- » Final Plan: Vote to adopt final plan



EXECUTIVE SUMMARY

This briefing document outlines Key Issues in Governance, Technology & Operations, and Finance to be resolved during the King County Regional E-911 strategic planning process.

The strategic planning process was set in motion by King County Ordinance 18139, and shaped by the King County E-911 Scoping Committee in its Strategic Planning Process Report of May 31, 2016. In that report, the Scoping Committee identified a Shared Vision, Guiding Principles, and Goals that are fully restated in Appendix I.

Shared Vision, Mission, Guiding Principles, and Goals

Shared Vision — for the Regional E-911 System

King County's Regional E-911 System will be among the best in the country in terms of:

- Rapid and effective routing of requests for service;
- Efficient use of public resources;
- Effective deployment of evolving technology; and
- Adherence to the guiding principles.

Mission — for the Regional E-911 System

In progress: Clarity and agreement about the current and future core service responsibilities and associated costs of the King County Regional E-911 System and Program Office is being developed during this strategic planning process. (due: February 2017 to Planning Group; May 2017 to Leadership Group)

Guiding Principles — for the Regional E-911 System

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Process <ol style="list-style-type: none"> a. Transparency b. Project Management Principles c. Collaboration d. Predictability e. Advocacy f. Inclusion | <ol style="list-style-type: none"> 2. Finances <ol style="list-style-type: none"> a. Fiscal Responsibility b. Financial Sustainability c. Cost Effective 3. Standards <ol style="list-style-type: none"> a. National Best Practices b. Performance Metrics c. Continuous Improvement |
|---|--|

Goals — for the Regional E-911 System

As part of the strategic planning process, develop a dashboard of outcome metrics to monitor progress toward these goals, to be in alignment with the guiding principles above.

1. No Request Lost
2. Prompt Response
3. Seamless System-wide Technology
4. Meet or Exceed Industry Standards
5. Equity
6. Secure, Resilient & Survivable

Strategic Questions

The Regional E-911 Scoping Committee also identified a number of strategic questions to guide the work of the three Strategic Planning Task Forces, including:

Governance

- G1. What is the definition of the King County Regional E-911 System?
- G2. What is the management structure for the King County Regional E-911 System, in terms of authority, oversight, operations, accountability, responsibility, and performance monitoring?
- G3. What is the major decision-making structure for the King County Regional E-911 System, including process management, research, input, and authority?
- G4. What is the conflict resolution process for the King County Regional E-911 System?
- G5. What is the stakeholder engagement structure for the King County Regional E-911 System, including input into decisions, reporting, and performance monitoring?

Technology & Operations

- T1. What is the technology vision for the King County Regional E-911 System, in terms of the technology's purpose, evolution, and investment approach?
- T2. What are the technology requirements for integrating with the state's E-911 system, and for local jurisdictions to connect to the regional E-911 system?
- T3. What is the ongoing decision process for technology investments, including options, tradeoffs, priorities, budgets, and schedules?
- T4. What are the ongoing performance metrics for technology in the King County Regional E-911 System, including the performance of the system, vendors, and local partners?
- T5. What are the security requirements for the King County Regional E-911 System, including protection of the system, individual privacy, and proprietary information?

Finance

- F1. What are the procedures and processes for forecasting, reporting, auditing, and operations related to King County Regional E-911 System revenue and expenditures?
- F2. What are the funding needs and revenue strategies for the King County Regional E-911 System, including NG911 upgrades and keeping the system up to date over time?
- F3. What are the stakeholder reporting requirements related to the King County Regional E-911 System finances, including revenue, expenditures, efficiency, and effectiveness?
- F4. What are the investment management policies for the King County Regional E-911 System related to forecasting, investments, reserves, and contingencies?

Key Issues

In the context of the Shared Vision, Guiding Principles, and Goals, the Strategic Plan Task Forces have responded to the Strategic Questions by identifying the following Key Issues as topics for deeper analysis in order for the strategic plan to answer the questions above:

Governance

- **Decision-Making Authority, Feedback, and Transparency:** A formal process is needed to effectively make decisions about the KC E-911 Regional System and deal with emerging challenges and opportunities. This should include clear roles, responsibilities, and communication protocol to enable timely decisions that are responsive to both established objectives and new information.
- **Conflict Resolution:** A conflict resolution process is needed, and should include how conflicts are identified, at what level of governance are they addressed, and how they are they resolved.
- **Coordination/Communication:** There is demand for establishing protocols for communication between the E-911 Program Office and the PSAPs, as well as among and between the PSAPs.

Technology & Operations

- **Pace of Change:** The pace of technology change brings new public and user expectations that can stress the Regional E-911 System and its operations, and will require a continuous process to review and evaluate new changes and fiscal impacts.
- **Architecture Complexity and Strategy:** The overall architecture of the Regional E-911 System needs to be evaluated, with a strategy developed to respond to overall system objectives and evolving future conditions. This may require an ongoing Technology & Operations committee to conduct continuous review and evaluation.
- **Security:** Security of the Regional E-911 System overall, as well as other critical PSAP systems, needs to be a constant focus and priority.
- **Call and Operational Complexity:** The nature of emergency calls is changing rapidly, with ever-increasing volumes of calls from wireless devices and emerging technologies such as text, video and telematics calls to 911. This will drive a variety of ongoing technological, operational and funding issues for the Regional E-911 System overall and the systems and operations at the individual PSAPs. A technology and operations strategy must balance operational impacts with effectiveness gains from technology in a diverse environment with geographically distributed PSAPs, different jurisdictional boundaries and variety of call types handled by various PSAPs.

Finance

- **Fiscal Sustainability:** Forecasted increases in operating and capital expenditures need to be evaluated in detail to determine whether alternative assumptions are needed. Forecasted growth in these expenditures is driving fiscal deficits in the future. However,

revenue adequacy of existing sources will also need to be evaluated as part of a financial sustainability plan.

- **Clarity of Financial Responsibilities.** There is ambiguity about the appropriate roles of the E-911 Office and the PSAPs in supporting the Regional E-911 System. It will be important to determine what services the Program Office is required to provide, and beyond those costs, what are the financial implications, if any, for individual PSAPs.
- **Financial Policies and Accountability:** Clear financial policies and accountability are needed related to budgeting and accounting.
- **Distribution of Funding:** A clear and transparent system for distribution of funding between the E-911 Office and PSAPs and between PSAPs is essential, and this system must also be able to evolve with changing technologies and operations.

Once this draft document is finalized and approved by the Planning Group and Leadership Group, the Key Issues above will serve as a check-list for strategic planning, in order to guide identification of measurable objectives, strategic actions, and key performance metrics.

Objectives will respond to the issues above, as well as the vision, principles, and goals listed on page 1. These objectives will also be devised to be responsive to future issues, opportunities, and future unknowns.

TABLE OF CONTENTS

EXECUTIVE SUMMARY 1

TABLE OF CONTENTS 5

INTRODUCTION 6

GOVERNANCE ISSUES..... 10

TECHNOLOGY & OPERATIONS ISSUES 15

FINANCE ISSUES 24

Appendix I: Strategic Plan Shared Vision, Guiding Principles, & Goals..... 32

Appendix II: Technology & Operations Background & References 33

INTRODUCTION

This briefing document outlines key governance, technology and operations, and finance issues to be resolved during the King County Regional E-911 System strategic planning process. The resulting strategic plan will address priorities for the regional portions of the E-911 system and guide the ongoing process for decision making, funding and implementing those priorities.

In sections on Governance, Technology & Operations, and Finance, this document:

- Restates the **Strategic Questions** from the Strategic Plan Scoping process,
- Identifies **Best Practices** being researched by the Strategic Planning Task Forces,
- Responds to **Baseline Questions** posed during the Scoping process,
- Explores **Existing Conditions** and **Future Challenges**, and
- Summarizes **Key Issues** to be addressed through the Strategic Planning process.

Once this draft document is finalized and approved by the Planning Group and Leadership Group, the Key Issues identified here will serve as a check-list for strategic planning. These issues are listed as a group in the Executive Summary, and described in more detail within the Governance, Technology & Operations, and Finance sections that follow.

In identifying the Key Issues, the Task Forces used the following criteria:

- Cover the breadth of the Strategic Questions,
- Respond to Best Practices,
- Capture Existing Conditions, and
- Address Future Challenges as summarized in this document.

As such, the Key Issues frame the strengths, opportunities, and challenges in each content area. The Key Issues are intended to focus future analysis in a way that responds to strategic questions, best practices, existing conditions, and future challenges. During the next phase of strategic planning, these Key Issues will guide identification of measurable **Objectives, Strategic Actions**, and **Key Performance Metrics**.

An additional Key Issue did not come directly from the Task Forces, but rather has emerged in various forms throughout the process is a definition of the King County Regional E-911 System and Program Office **Mission**. The strategic plan must provide a definition of what core services and technologies are fundamental to the E-911 Program Office's role in order to provide direction to future budgeting and operational decisions. This includes a clear definition of who pays for what, who assumes the contractual risk, and a clear line between the system's regional elements versus local elements.

Strategic Planning Charge

Ordinance 18139 calls for a King County Regional E-911 System's Strategic Plan to:

1. Integrate with the state's E-911 system and the responsibilities of local jurisdictions in their delivery of E-911 dispatch services;
2. Develop a ten-year technology investment strategy for the Regional King County E-911 System with tactics and a process for adapting to evolving technology and service conditions;
3. Develop a ten-year sustainable financial plan for the Regional King County E-911 System with tactics and a process for adapting to evolving financial conditions; and
4. Define an ongoing decision-making or governance structure for implementing and achieving the vision and goals of the Regional King County E-911 System, including a conflict resolution process.

Strategic Planning Definitions

For the purposes of this King County Regional E-911 System Strategic Planning Process, the following definitions apply:

Shared Vision – An aspirational statement of what the King County Regional E-911 System should be in the future, as initially defined during Scoping.

Mission – Statement of the King County Regional E-911 System and Program Office's organizational purpose and core services.

Guiding Principles – Major tenets that identify the manner in which the King County Regional E-911 System will pursue its Shared Vision, as initially defined during Scoping.

Goals – Prioritized future conditions and targets serving as an intermediate step toward achieving the Shared Vision in line with the Guiding Principles, as initially defined during Scoping.

Key Issues – The most critical issues currently facing the King County Regional E-911 System, as articulated by the Strategic Plan Task Forces in this Issue Brief.

Objectives – Specific statements of desired conditions responding to the Key Issues that can be measured within a specified timeframe. To be defined in Task Force draft recommendations.

Strategic Actions – Activities that need to be taken in order to directly accomplish the Objectives. To be defined in Task Force draft recommendations.

Key Performance Metrics – Data that will be collected and reviewed to track and measure progress on achieving the Objectives. To be defined in Task Force draft recommendations.

Glossary of Terms and Acronyms

9-1-1 Call Routing Network – Together the Washington State 911 office and the King County E-911 Program Office maintain the 9-1-1 call routing network which consists of a system of circuits, networks and/or equipment designed to move 9-1-1 calls from the state system to the Public

Safety Answering Points (PSAPs), including the information technology system known as Emergency Services Internet-protocol Network (ESInet).

COTS – Commercial Off The Shelf Software

CPE - Customer Premise Equipment – Equipment used by the PSAP to process 9-1-1 calls.

E-911 Program Office – In King County, the Regional E-911 System for routing 9-1-1 calls is administered by the E-911 Program Office, which is a section of the Office of Emergency Management within the Department of Executive Services in the county government.

EMS – Emergency Medical Services.

ESInet – Emergency Services Internet-Protocol Network – A statewide system for routing emergency calls. ESInet is part of the 9-1-1 Call Routing Network.

FD – Fire Department.

IAG – Interim Advisory Group – The Interim Advisory Group's purpose is to advise and consult with the King County E-911 program office regarding technology, financial and system operational issues until completion of the E-911 strategic plan and implementation of an ongoing decision-making and governance system. The advisory group is guided by King County Council by Ordinance 18139 to provide comment and recommendations on the county's E-911 program office 2017-2018 budget proposal.

NENA – National Emergency Number Association.

NG911 – Next Generation 9-1-1 – A national plan¹ aimed at updating the 9-1-1 service infrastructure to improve public emergency communications services in an increasingly wireless mobile society. In addition to calling 9-1-1 from a phone, it seeks to enable the public to transmit text, images, video and data to the PSAPs.

PD – Police Department.

PSAP – Public Safety Answering Point – Call answering locations for 9-1-1 calls originating in a given area. In King County, the twelve PSAPs are governed and largely funded by the independent jurisdictions and agencies they serve. PSAPs are responsible for answering a 911 call sent to their center.

Regional E-911 System – In King County, the phrase “Regional E-911 System” or simply “The System” — as used in this document only — includes the governance, technology, operations and

¹ http://c.ymcdn.com/sites/www.nena.org/resource/collection/22dbdb9d-fbd7-445e-a760-1c39a22ed34/National_NG911_Migration_Plan.pdf?hhSearchTerms=%22NG911%22

finances related to the area of responsibility of the E-911 Program Office, as defined by the RCW and WAC (Revised Code of Washington and Washington Administrative Code).²

Telecommunications Providers – Private companies (such as AT&T, Verizon, Century Link, etc.) that provide telecommunications services, route calls, and collect excise taxes.

VoIP calls – Voice Over Internet Protocol calls – Calls through telephone equipment using the Internet.

Washington State 911 Office – The Washington State 911 office and the King County E-911 office share responsibility for maintaining a network and equipment that links private telecommunications providers to the 911 call network.

Wireless calls – Calls through cellphones.

Wireline calls – Calls through traditional landline telephones.

Process ground rule on PSAP consolidation

The King County Regional E-911 System Strategic Plan Scoping process clearly states that “the evolving number and configuration of PSAPs is not part of the strategic planning process. Being locally governed and largely locally funded, the number and configuration of PSAPs is an ongoing process of local decisions by individual PSAPs and/or groups of PSAPs. The strategic plan will not include a top-down PSAP consolidation.”

This means that the Strategic Plan will not dictate the number or configuration of the PSAPs. It does not mean that the Strategic Plan needs to be designed to protect the existing number and configuration of the PSAPs. Once the Strategic Plan is finished and adopted, the PSAPs themselves might choose to modify their number and configuration to better fit with the evolving regional system. But, the Strategic Plan will not dictate this action.

² See RCW 82.14B.020 (2), (3); WAC 118-66-030 (2), (62); see generally RCW 38.52.51; 82-14B-010 et. seq.; WAC 118-66-010 et. seq.

GOVERNANCE ISSUES

Introduction

In June 2015, the King County Auditor's Office published findings from its independent review of the King County Regional E-911 System operations and recommended creation of a governance mechanism. The King County Auditor's report identified the lack of a formal and effective governance structure as the most serious challenge facing the implementation of Next Generation 911 (NG911). The Auditor recommended establishing a governance structure to improve collaboration, planning, and decision-making. Currently, there is no formal process for input or feedback, and in the event that partners disagree on priorities, projects or programs, there is no mechanism for conflict resolution. All partners in the King County Regional E-911 System want to develop a formal governance structure and to provide clarity regarding decision-making processes.

Strategic Governance Questions

The Regional E-911 Scoping Committee identified a number of strategic questions, including:

- G1. What is the definition of the King County Regional E-911 System?
- G2. What is the management structure for the King County Regional E-911 System, in terms of authority, oversight, operations, accountability, responsibility, and performance monitoring?
- G3. What is the major decision-making structure for the King County Regional E-911 System, including process management, research, input, and authority?
- G4. What is the conflict resolution process for the King County Regional E-911 System?
- G5. What is the stakeholder engagement structure for the King County Regional E-911 System, including input into decisions, reporting, and performance monitoring?

Best Practices

What are others doing for governance of regional E-911 systems with multiple operating groups?

Several reports list best practices in governance that will be reviewed and used by the Task Force to evaluate governance structures from other jurisdictions. The FCC, APCO, and NENA each have reports that address best practices for successful governance structures given the new technology environment of NG 911. The Task Force will review these practices and begin to address the key issues and challenges for governance of the King County Regional E-911 System by evaluating the effectiveness of other governance structures from jurisdictions in the United States and within King County. Those governance examples will be selected based on 4 main criteria:

- Multiple jurisdictions or PSAPS are represented
- Their role is advisory to a final decision authority

- They include a combinations of local and regional systems
- There is a structure for operational and policy input

Once governance examples are selected they will be evaluated based on best practices for NG 911 systems identified by the FCC, APCO, and NENA and on additional criteria identified by the Task Force including:

- Definition of the system being governed
- Participation of partners within that system
- Processes for decisions and dispute resolution
- Reporting and communication
- System priorities, works plans or strategic planning
- Budget and finances
- Technology and operations
- Standards and metrics
- Representation and voting
- Authority

The evaluation and discussion of the attributes of other governance structures will lead the Task Force to develop a governance model for the King County Regional E-911 System.

Baseline Questions

What is the current governance structure (organization chart; decision structure oversight; accountability; responsibility, conflict resolution process)?

Currently there is no formal governance structure to guide the interactions between the public-safety answering points (PSAPs) and King County or that facilitates collaboration on decisions related to the operational, technical, and financial management of the King County Regional E-911 System. In 2010, a five-year Interlocal Agreement (the King County Enhanced 911 Participation Agreement) was signed by all PSAPs. That Agreement expired and due to a breakdown of trust between the PSAPs and the E-911 office was not re-adopted by most of the partners. The City of Seattle and the King County Sheriff's office were the only PSAPs to sign the new agreement. Historically, the E-911 Program Office has held bi-monthly meetings for PSAP directors to discuss upcoming projects and related business. However, there was no formal structure for decision-making or conflict resolution regarding E-911 projects that impact PSAPs, the Regional E-911 System, or its resources.

The County has final appropriations authority and the King County E-911 Program Office has the ability to make operational decisions within their approved budget authority.

An Interim Advisory Group (IAG) was formed in 2016 and is tasked with advising and consulting with the King County E-911 Program Office regarding technology, financial and system operational issues until completion of the King County Regional E-911 System Strategic Plan and implementation of a new governance structure.

What are the governance lessons from the 2015 King County Auditor's report on E-911 operations?

The King County Auditor's report found that the lack of a formal governance structure was the most pressing issue for the King County Regional E-911 system. The report recommended beginning a process to create a governance structure that contains a conflict resolution process and a formal structure for collaboration and input.

The Auditor's report went on to advise that King County temporarily suspend its implementation of NG911 until these governance issue could be resolved. The recommendations focused on improving collaboration and planning as well as establishing a financial baseline that would allow stakeholders to agree on required spending and estimated revenue for the program.

Existing Conditions

The Enhanced 911 Participation Agreement was not unanimously ratified by PSAPs and is not in effect. Currently, there is not a formal governance structure for PSAPs and the County to collaborate on decisions related to the operational, technical and financial management of the King County Regional E-911 System. The lack of a formal structure for making decisions or resolving conflicts with E-911 Program Office projects has resulted in the appearance of unilateral action by the King County E-911 Program Office and frustration at the PSAP level with the lack of transparency and participation in the decision-making process. The King County Council has final funding authority while the E-911 Program Office makes operational and project decisions within its approved budget authority.

An Interim Advisory Group (IAG) was formed in 2016 and tasked with advising and consulting with the King County E-911 Program Office regarding technology, financial, and system operational issues during the development of the Regional E-911 Strategic Plan. The four (4) voting member IAG will be replaced when a formal governance mechanism is adopted as a result of the strategic planning process. The IAG membership is as follows:

- One (1) non-voting representative from the King County E-911 Program Office.
- One (1) person representing NORCOM and Valley Communications Center.
- One (1) person representing the PSAPs operated by the City of Bothell, City of Enumclaw, City of Issaquah, Port of Seattle, City of Redmond, University of Washington, and Washington State Patrol (each PSAP without a designated voting member may designate a non-voting member).
- One (1) representative from the PSAPs operated by the City of Seattle.
- One (1) representative from the PSAP operated by the King County Sheriff's Office.

Future Challenges

The success of a regional governance structure is dependent on overcoming historical relationships between the PSAPs and the King County E-911 Program Office, which resulted in a lack of trust between the parties. Substantial work has already been done in this regard, with the formation of the IAG, which has improved dialogue, collaboration, and transparency. In addition, steps taken by all partners through the scoping and strategic planning processes have led to

stronger relationships and improved communications. Continuing to strengthen that communication will be an ongoing priority. A formal agreement will be needed on establishing an effective and consistent communications structure. This has been among the main issues identified by the participating agencies.

The Governance Task Force recognizes that the King County Council has statutory authority over revenue and budget decisions. A principal challenge will be to develop a governance model that ensures meaningful participation by the PSAPS on issues that affect PSAPs operations and budget. Any governance model must have an institutionalized structure so that it can continue to function through conditions of staff turnover and rotation.

Summary of Key Issues

Decision-Making Authority, Feedback, and Transparency

A formal decision-making process is needed.

The King County Council has authority over appropriations, while the E-911 Program Office has authority to make decisions within its budget. There is not a formal process in place for PSAPS to participate in deliberations or to make recommendations to the King County E-911 Program Office or the King County Council. Decisions made by the King County E-911 Program Office decisions may often impact the PSAPs without formally soliciting and considering their input. Often, there is a lack of involvement by higher-level policy and elected officials at key decision points. This includes decisions regarding program priorities, projects, timing, and expenditures.

In the past, funding, equipment, and projects have been deployed to the PSAPs without PSAPs having meaningful input into those decisions. An example was SMART 911, where there was little consultation. As a consequence the plan wasn't fully considered and some PSAPs were unwilling or unable to run the technology when it went live due to security issues and other challenges.

A formal input structure with consistent representation, attendance, and accountability for decisions is critical to the success of a new governance model. PSAPS would like clarity about roles and authority at all levels of the regional system. PSAPs would also prioritize meaningful input into projects, planning, and budgeting before those decisions are made. Additionally, transparency around budget and expenditures is important, as are predictable timelines and processes for effective consideration of operational, technical, and fiscal issues.

Conflict Resolution

A plan for conflict resolution system-wide is needed, including who has authority, and what escalates a conflict up the system.

No formal or consistent mechanism exists for resolving conflicts or elevating issues for consideration. A structure that can allow for these issues to be raised will be critical to any governance model. The need for conflict resolution could include addressing King County E-911 Program Office decisions that may have adverse impacts on one or more PSAPS or, in turn, PSAP decisions that may impact the regional system. Specifics to consider are how and when to trigger

the conflict resolution process, who has authority to resolve conflicts, and what escalates a conflict up the regional system.

Coordination/Communication

There is a strong demand for establishing agreed upon protocols for communication between the King County E-911 Program Office and the PSAPs, as well as between the PSAPs.

Historically, stability in system technology did not require a significant need for PSAP coordination and communication. However, the advancement and cost of new technology and the operational changes it requires calls for more coordination and collaboration at all levels of the King County Regional E-911 System. The System can better leverage technology investments with improved coordination/communication between the parties.

Historically, the lack of effective communication between the E-911 Program Office and PSAPs at times resulted in confusion and mistrust. Some examples include:

- During bi-monthly meetings, PSAPs would be informed of what was occurring, but not consulted.
- PSAPs had no formal avenue to be informed about operational issues.
- Communication was viewed as unilateral, from the King County E-911 Program Office to the PSAPs with no predictable mechanisms by which the PSAPs would be given an opportunity to provide input or ask questions.

Among the Governance Taskforce, there is consensus that a formal mechanism for coordinating activities across the PSAPs is needed to mitigate, plan for, and find efficiencies in decisions that could impact other PSAPs. PSAPs don't all have the same internal systems. Decisions could impact PSAPs differently and they may have to make adjustments to accommodate a regional plan.

It is appropriate that the E-911 Program Office represent King County and its PSAPS at the state Enhanced 911 Advisory Committee, and there needs to be formal lines of communication for the PSAPS to receive information and provide input on actions at the state level.

Other

Issues that may not be directly addressed in developing a new governance model were also identified and discussed. They included:

- **Lack of equity on backups** throughout the County. In the current system, each PSAP has a stand-alone system and some PSAPs are sharing a backup (i.e. Redmond and Issaquah share NORCOM). In the event that these PSAPs require a backup at the same time, only one PSAP can be backed up successfully.
- **Lack of agreement on technology investment** process and timing.
- **Lack of project management principles** in place, no formal management systems
- **Lack of predictable timelines and processes** for effective consideration of operational, technical and fiscal issues.

TECHNOLOGY & OPERATIONS ISSUES

Introduction

The Technology and Operations Task Force is responsible for establishing a ten-year technology strategy for the King County Regional E-911 System. While not the sole focus of this effort, the migration to and sustained compatibility with national standards and practices for Next Generation 911 (NG911) has been identified as a key strategic goal for the System. Relevant reference standards and supporting documents have been listed in the Appendix of this brief.

The Task Force has begun a variety of parallel activities:

- Conducting interviews with each of the 12 PSAPs (Public Safety Answering Points) and the King County E-911 Program Office to identify critical issues facing 911 services and the emergency services dispatching community for the next 10 years.
- Gathering information on the existing systems and services in use by the King County E-911 Program Office and the PSAPs to develop an understanding of current operations.
- Understanding the possible impacts of the statewide ESINet on the future regional system.
- Gathering information on current or planned projects to assess impacts on long term strategic alternatives.

This work will then lead to a series of meetings where potential future-state models will be examined and discussed, leading to detailed work to establish the preferred strategies and information on implementation.

Strategic Technology & Operations Questions

The Regional E-911 Scoping Committee identified a number of strategic questions, including:

- T1. What is the technology vision for the King County Regional E-911 System, in terms of the technology's purpose, evolution, and investment structure?
- T2. What are the technology requirements for integrating with the State E-911 system, and for local jurisdictions to connect to the King County Regional E-911 System?
- T3. What is the ongoing decision process for technology investments, including options, tradeoffs, priorities, budgets, and schedules?
- T4. What are the ongoing performance metrics for technology in the King County Regional E-911 System, including the performance of the system, vendors, and local partners?
- T5. What are the security requirements for the King County Regional E-911 System, including protection of the system, individual privacy, and proprietary information?
- T6. Addressing these strategic questions will entail assessing and defining the overall technical architecture, strategic goals and technology governance process for the King County Regional E911 System.

Best Practices

Manage, review and implement in alignment with national standards and best practices (i.e. (e.g. NENA, APCO, CALEA, PMP, FCC, USDOT, NFPA)). The work of the Technology and Operations Task Force will examine standards and industry best practices for both the 911 system technology and the operational practices needed to effectively support and use these systems. It will conform to King County security standards, formal standards and requirements established by Washington State for interfacing to the statewide ESINet. A listing of key reference standards and documents identified to date is included in the Appendix II (page 32). .

Review of case studies

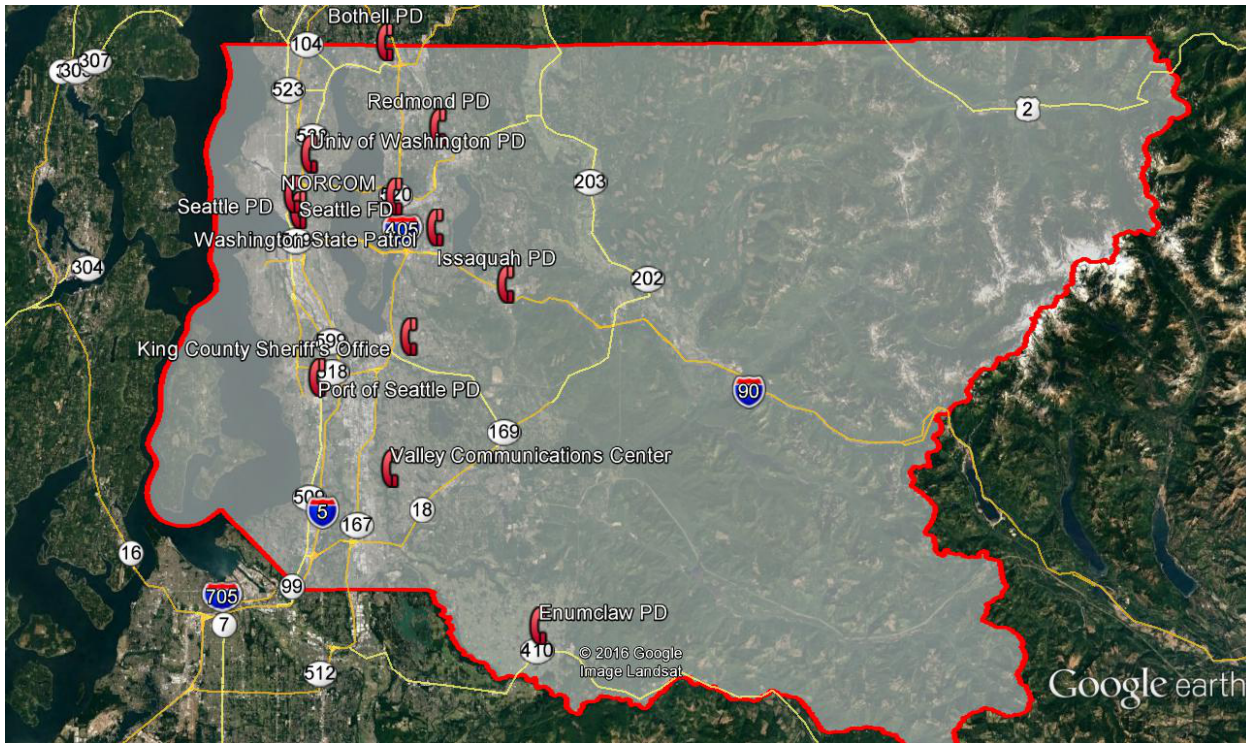
Using the Auditor’s Report, coupled with the experiences of Task Force members and the consulting team, the Task Force will identify and examine the lessons learned from jurisdictions that have faced similar challenges to King County. These examples will include multi-PSAP counties in Washington as well as other areas of the country in hopes of gaining technology, programmatic, and operational insights into text-to-911.

As other models and lessons are examined, the Task Force will assess how technology and operational requirements were applied and the strategies used by the PSAPs to prepare for and implement NG911. This is a critical element of our work for the strategic planning effort since the E-911 Program Office continues to work collaboratively with the PSAPs to establish technical and operational models.

Baseline Questions

What relevant technology is in use within the King County Regional E-911 System (the System) now?

The System is a decentralized architecture, with each of the 12 PSAPs directly interfaced to the statewide ESINet. A 13th “Test PSAP” is also connected to the ESINet to allow pre-deployment testing of technology changes before installing in the 12 PSAPs. See the map below of PSAP locations.



While a common system vendor and technology platform are used across the PSAPs, various components of the individual PSAP systems are scheduled for replacement at different times; this will be factored into long-term strategies. The table below provides a summary of the timing for equipment replacement.

	Pots-srv	Pots-srvb	VoIP-srv1	VoIP-srv2	Database1 server	OBJ-srv	AIM modules	Mediant 1000 gateway	Map Server	Pictometry Server	VIPER Switches
Bothell PD	Dec-16	Dec-16	Dec-16	Dec-16	Dec-16	Dec-16	Dec-17	Dec-17	Jan-17	Jan-18	Dec-17
Enumclaw PD	Jun-17	Jun-17	Jun-17	Jun-17	Jun-17	Jun-17	Jun-18	Jun-18	Jan-17	Jan-18	Jun-18
Issaquah PD	Jun-17	Jun-17	Jun-17	Jun-17	Jun-17	Jun-17	Jun-18	Jun-18	Jan-17	Jan-18	Jun-18
King County Sheriff	Nov-19	Nov-19	Nov-19	Nov-19	Nov-19	Nov-19	Nov-20	Nov-20	Jan-17	Jan-18	Nov-20
NORCOM	Dec-18	Dec-18	Dec-18	Dec-18	Dec-18	Dec-18	Dec-19	Dec-19	Jan-17	Jan-18	Dec-19
Port of Seattle PD	Dec-17	Dec-17	Dec-17	Dec-17	Dec-17	Dec-17	Dec-18	Dec-18	Jan-17	Jan-18	Dec-18
Redmond PD	Jun-18	Jun-18	Jun-18	Jun-18	Jun-18	Jun-18	Jun-19	Jun-19	Jan-17	Jan-18	Jun-19
Seattle Fire	Aug-20	Aug-20	Aug-20	Aug-20	Aug-20	Aug-20	Aug-21	Aug-21	Jan-17	Jan-18	Aug-21
Seattle PD	Aug-20	Aug-20	Aug-20	Aug-20	Aug-20	Aug-20	Aug-21	Aug-21	Jan-17	Jan-18	Aug-21
Test PSAP	Jun-17	Jun-17	Jun-17	Jun-17	Jun-17	Jun-17	Jun-18	Jun-18	Jan-17	Jan-18	Jun-18
U. of WA PD	Jul-20	Jul-20	Jul-20	Jul-20	Jul-20	Jul-20	Jul-21	Jul-21	Jan-17	Jan-18	Jul-21
Valley Comm	Sep-19	Sep-19	Sep-19	Sep-19	Sep-19	Sep-19	Sep-20	Sep-20	Jan-17	Jan-18	Sep-20
WA State Patrol	Feb-18	Feb-18	Feb-18	Feb-18	Feb-18	Feb-18	Feb-19	Feb-19	Jan-17	Jan-18	Feb-19

A high-level diagram of the current King County Regional E-911 System network is provided in Appendix II.

In addition, the King County E-911 Program Office has implemented, or is in the process of implementing, a number of ancillary systems and services that support either the processing of 911 calls or the maintenance and operations of the 911 system. These include interim solutions for Text-to-911, system management and monitoring networks, applications, and imagery to enhance mapping functionality and viewing for call takers. These systems will be integrated into the 10-year planning horizon.

The statewide ESINet has undergone a transition to a new vendor and for completing NG911 system architecture. The ESINet transition will touch each PSAP during 2017. This conversion will be integrated into current operations and will play a significant role in developing the 10-year strategy.

What are the technology lessons from the 2015 King County Auditor's report on the King County Regional E-911 System operations?

Processing and routing 911 calls to the proper PSAP requires a complex interaction between the telecommunications carriers, the statewide ESINet, and the equipment at the PSAPs, to process calls and dispatch to law enforcement, fire and/or emergency medical services. Over the years, the King County E-911 Program Office has increased the number of supporting systems and services to meet the identified and emerging needs of 911 in general, and the PSAPs in particular, without a clearly identified strategy for sustaining the ongoing operational and replacement costs for these systems and services. In some cases, these systems or services have brought unforeseen technological, operational or financial impacts on the PSAPs.

The Task Force will consider each level of the call routing and handling process to make sure that technology strategies developed for the 10-year planning horizon have well understood acquisition, operation and replacement costs for all Partners. Operational policies and practices will be considered in order to provide so that clearly defined expectations. The task force will articulate responsibilities and risks aligned to each of the Partners including: King County E-911 Program Office, the PSAPs, and possibly shared responsibilities and risks. This will aid in clarifying the core mission and responsibilities of the King County E-911 Program Office and the King County Regional E-911 System to support the work of the Governance and Finance Task Forces.

The King County Auditor's report outlined the following:

- King County Department of Information Technology's (KCIT) project review process can provide project oversight and review of project plans, business cases and cost benefit analysis of King County E-911 Program Office projects.
- KCIT also brings security expertise and processes to the King County E-911 Program Office and slate of projects.
- Implementing NG911 will be a complex multi-year process requiring a clear and detailed plan coordinated between the King County E-911 Program Office, 12 PSAPs and the State ESINet.
- Collaboration with stakeholders and clear decision-making is needed to plan effectively for emerging capabilities.

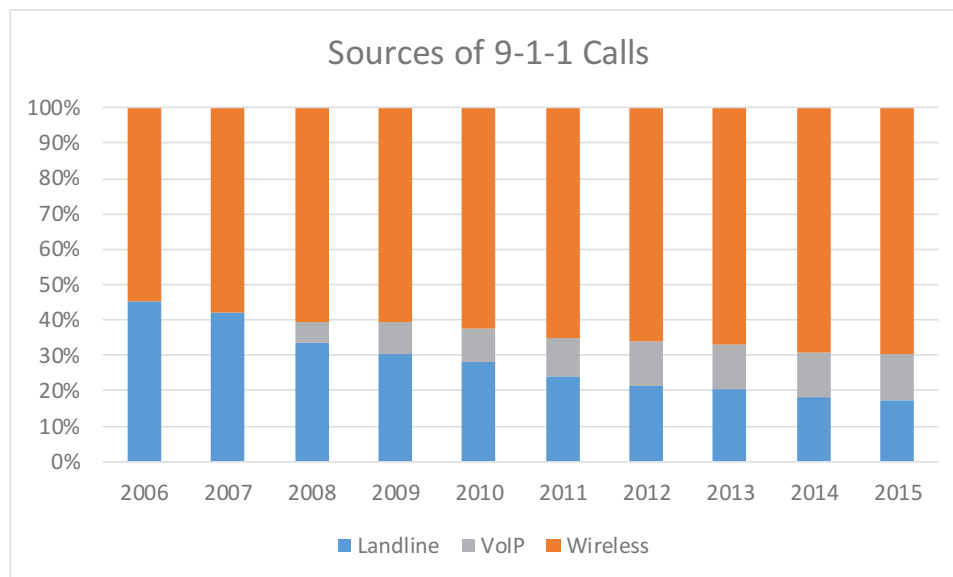
Existing Conditions

The System uses a decentralized architecture with equipment located at each of the 12 PSAPs that directly interconnects them to the statewide ESINet. This equipment is sourced from a single vendor, and provides a homogeneous mix of system capabilities and functionality so that each PSAP has access to comparable services. Connectivity between the PSAP equipment and the State

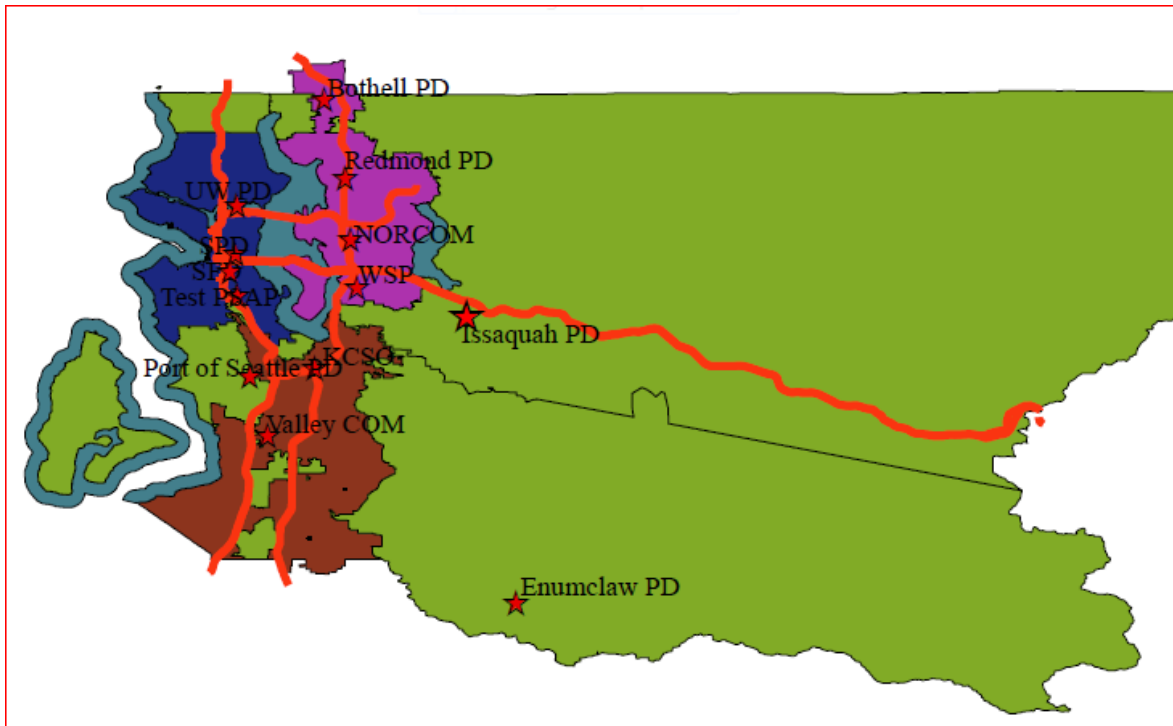
ESINet is a combination of legacy telecommunications circuits and NG911 networks using internet protocol. While envisioned as a mechanism for preparing PSAPs for a full NG911 future, it may be necessary to make adjustments to this architecture to meet current NG911 strategies, capabilities and security requirements. A high-level diagram of the current King County E-911 System network is provided in Appendix II.

The State of Washington is replacing the current statewide ESINet with a network provided by a different vendor. This will bring new security and interface requirements that will need to be implanted to allow the PSAPs to interface to the next generation ESINet, is planned for completion in 2017. The new ESINet will most likely provide a stable environment for the King County Regional E-911 System during the 10-planning horizon.

King County continues to experience decreasing use of landline telephones for calls to 911, an increasing use of Voice over IP (VoIP) and wireless phones. This is a consistent trend across the country.



Wireless calls present a variety of challenges in emergency call processing including the need to route the call to a PSAP based on imperfect caller location information at the time the call is placed. Currently, wireless 911 calls are initially routed to the five largest law enforcement dispatch centers King County; Seattle Police, NORCOM, King County Sheriff's Office, Valley Com and Washington State Patrol. A map of the wireless call routing areas is provided below.



Wireless 911 calls are initially routed to one of 5 PSAPs in King County based on the coverage area of the cell site or cell site sector.

- Calls originating from cell sites/sectors along the primary State highways (shown as red lines in the map) are routed to the Washington State Patrol's PSAP
- Calls originating in the green area are routed to the King County Sheriff's Office
- Calls originating in the dark blue area are routed to the Seattle Police Department
- Calls originating in the purple area are routed to NORCOM
- Calls originating in the brown area are routed to Valley Com.

If the circumstances of an incident reported by a wireless caller require the response of law enforcement, fire or medical resources that are not dispatched by the PSAP originally receiving the call, the caller is transferred to one of the other seven PSAPs for further call processing and dispatch of local response units. In some situations, different PSAPs are involved in dispatching the various disciplines to a given location, further complicating how best to initially route and then transfer wireless calls. While wireless industry initiatives are making progress on improving wireless caller location improvements, local governance and decision making processes will guide future strategies related to how wireless calls are routed and managed from over 7,000 towers covering over 28,000 sectors in King County.

The King County E-911 Program Office provides direct funding to the PSAPs for a variety of technology and operational support costs. This includes direct support for a total of 23 personnel; including 9 engaged in GIS/CAD support, 9 engaged in IT system support, and 5 engaged in 911 and telephony support (a table showing the level of staffing supported in each PSAP is included in the Appendix). The Program Office also administers a mechanism for fund

disbursement for use by the PSAPs to support operational call receiver positions and 911 related technology investments.

This funding support is a critical component for the PSAPs and there will be pressure for it to continue. But the PSAPs understand that the core mission of accurately and reliably delivering 911 calls from the public to the PSAPs needs to be a primary focus of the King County Regional E-911 System, Balancing these needs and interests in the strategic plan for future technologies, system services and/or architectures.

Future Challenges

The King County Regional E-911 System faces a number of challenges over the 10-year planning horizon. One of the most challenging of these is that it is difficult, if not impossible, to accurately predict how technology pressures in the latter years of a 10-year plan may impact the overall the System. Therefore, even with detailed strategies to guide the early years of the 10-year plan, it will be vital to establish ongoing technology and operations evaluation, recommendation and decision processes so that the system and the agencies can adapt to changes and risks that will inevitably occur.

The uncertain future of the full range of NG911 technologies presents a significant challenge. While there is a fairly solid base of standards and practices related to the fundamental architecture of the heart of NG911 networks, there are a number of visions for the types of services and capabilities that might be available once the core infrastructure is in place on a regional or nationwide basis. While there is a clear need and interest to get Text-to-911 services operational (initially with an interim solution and then in a native mode over NG911 infrastructure) there is less clarity of the operational benefits of enhanced capabilities such as the ability to transmit photos, video or other data as part of “calling 911”. It will therefore be important to establish a process for routine PSAP/Regional 911 Office engagement. The community must be engaged in reviewing and evaluating these capabilities and be involved in as collaborative a decision-making a practical before solutions are deployed at either the PSAP or regional level.

Planning for the future must be well informed and will be constrained by the economic capacity of the King County E-911 Program Office and the economic and operational capacities of the individual PSAPs. It is likely that over the 10-year planning horizon there will be other jurisdictions in the immediate region or across the country deploying enhanced NG911 capabilities and services. It will be imperative for these to be carefully evaluated against local constraints and priorities before undertaking any deployment of these in the King County Regional E-911 System.

Summary of Key Issues

Governance

Clear roles and responsibilities and decision-making processes are needed to effectively deal with emerging changes.

There appears to be a consensus that at its heart, the primary function of the King County E-911 Program Office and the King County Regional E-911 System should be focused on the effective and efficient processing of “calls” to 911 so they are quickly and accurately delivered to the PSAPs responsible for dispatching emergency services to the caller’s location. To accomplish this function, a combination of regional and PSAP technology systems will be required, along with security, maintenance and operational practices to sustain their effective performance. All of these will need to be conducted within a governance process that balances King County Regional E-911 System and individual PSAP needs, risks and constraints.

Pace of Change

The pace of technology change brings new public and user expectations that can stress 911 systems and operations, and will require a continuous process for review and evaluation of evolving changes and fiscal impacts.

While there is a fairly high degree of certainty on how the State’s ESINet architecture will enable the transition to NG911 capabilities, there is less certainty about what those future capabilities will be and how rapidly they will emerge as operational realities. NG911 means many different things to different people. As discussed above, “calls” to 911 are moving beyond traditional voice telephone calls to include capabilities such as texting and the delivery of additional content and data as pictures, video or other data interactions. In some situations, the “caller” or “reporting party” of the future may actually not be a person at all, but rather monitoring or telemetry device that automatically contacts 911 in the event of a vehicle crash or similar emergency event.

As part of its work, the Technology and Operations Task Force will develop a local definition of what NG911 will mean for the King County Regional E-911 System over the 10-year planning horizon. It will not be possible to anticipate all of these changes at the front-end of this process, so planning and executing these enhanced capabilities will require a well-structured and ongoing governance processes that evaluate the technological, security, operational and fiscal implications of incremental changes over time.

Architecture Complexity and Strategy

The overall architecture of the King County Regional E-911 System needs to be evaluated, with a new strategy developed to respond to overall system objectives and evolving future conditions. This may require an ongoing Technology & Operations committee to conduct continuous review and evaluation.

The strategic plan will need to evaluate and recommend whether the King County Regional E-911 System continues with the currently decentralized 911 technology architecture or if alternative strategies using a shared and more streamlined system architecture should be established. Strategies identified need to assure that future technologies can meet adopted security standards and support high reliability, resiliency, survivability, and accuracy. This needs to be accomplished with the understanding that the survivability of the King County Regional E-911 System as a whole needs to be achieved in an environment where multiple PSAPs may be adversely impacted by a

single catastrophic event. Strategies will also need to take into consideration the full lifecycle costs for acquiring, maintaining and replacing the technologies over time, both on a regional system perspective and for the system and equipment needed at each of the PSAPs

Business strategies need to balance the operational needs of the PSAPs long-term effectiveness of the King County E-911 Program Office and sustaining the quality of 911 service to citizens. Clarity of business operating strategies allows effective development of technology strategies that is responsive to shifts in demand from population growth, expectations from a changing demographic, and new capabilities to serve differently abled constituents. This will require that the decision-making processes be put in place to guide technology planning, implementation and operations and be integrated into the governance model as a continuing responsibility of all the involved entities.

Security

Security of the King County Regional E-911 System overall, as well as other critical PSAP systems, needs to be a constant focus and priority.

Security is a critical consideration at all levels of the emergency call handling process, not just for the King County Regional E-911 System elements themselves. There are currently no agreed upon security policies and architecture for the Regional E-911 System and this needs to be a current and continuing focus. The PSAPs utilize a wide variety of other technology systems that either touch or are impacted by the technologies in place for the Regional E-911 System. Therefore, establishing and sustaining security standards and practices will require close coordination and collaboration between the King County E-911 Program Office and the PSAPs to allow the needs and interests of all involved entities to be met.

Call & Operational Complexity

The nature of emergency calls is changing rapidly, with ever-increasing volumes of calls from wireless devices and emerging technologies such as text, video and telematics calls to 9-1-1.

These changes will create increasing complexities in the technologies and operational practices needed to properly route and handle calls. The strategic planning process will identify mechanisms to deal with these challenges in a technologically sound and fiscally responsible manner. As these new technologies emerge, there will also be increasing public expectations that they be used in our local 911 and emergency response environment. Given the level of diversity in the geographically distributed PSAPs and the jurisdictions they serve, this will likely have implications on funding requirements as well as the distribution of funding.

FINANCE ISSUES

Introduction

The Finance Task Force is charged with the research, deliberation, and recommendation of a 10-year Sustainable Financial Plan for the King County Regional E-911 System. The King County Regional E-911 Strategic Plan Scoping Process required that the Task Force address the following set of questions during the strategic planning process. The Task Force is progressing through its work program since being convened in late September.

Currently, the Task Force is reviewing the principles and key questions raised during the scoping process and has received detail on past, current, and forecasted revenues and costs. In addition, the Task Force is receiving information on policies that guide the:

- Financial management
- Distribution of resources to the PSAPs
- Assumptions and drivers about growth in future costs

Strategic Finance Questions

The King County Regional E-911 System Scoping Committee identified a number of strategic questions, including:

- F1. What are the procedures and processes for forecasting, reporting, auditing, and operations related to King County Regional E-911 System revenue and expenditures?
- F2. What are the funding needs and revenue strategies for the King County Regional E-911 System, including NG911 upgrades and keeping the system up to date over time?
- F3. What are the stakeholder reporting requirements related to the King County Regional E-911 System finances, including revenue, expenditures, efficiency, and effectiveness?
- F4. What are the investment management policies for the King County Regional E-911 System related to forecasting, investments, reserves, and contingencies?

In consideration of the Strategic Finance Questions, the Finance Task Force expects to recommend a 10-year Sustainable financial plan that:

- Is clear, understandable, and transparent in its development and reporting.
- Supports agreed-to system responsibilities of stakeholders to include the King County E-911 Program Office, King County, the PSAPs and their sponsoring agencies.
- Includes a mechanism to provide accountability for all expenditures articulated through financial management policies, timely reporting, and audits.
- Incorporates a measure of flexibility to accommodate evolving system needs and changes in resources.

Best Practices

The Task Force is currently reviewing practices of other comparable Washington (and nationwide) counties to better understand their practices related to service responsibility, financial management, and accountability. The Task Force would like to better understand how other E-911 programs in Washington State and other comparable places are funding and managing their E-911 programs. The term “best practices” does not necessarily reflect the purpose of the inquiry, since most Task Force members are interested in both the nature of the practices of other programs and whether those practices lead to effective and sustainable financial management of the program.

The work program in this task is divided into two areas. The first examines financial practices in Washington State counties that have service delivery conditions similar to King County. The second area would examine relevant and effective practices in other agencies across the country. The work will try to identify practices in other comparable settings that might be portable to the organizational, service delivery, and legal/policy conditions in King County and Washington State. The Task Force is also consulting other resources such as the generally accepted financial management principles for municipal agencies.

The Task Force is reviewing these and other questions related to financial best practices:

What are the organizational characteristics of other counties with regard to roles, responsibilities, and accountability between the King County E-911 Program Office and PSAPs?

What are the financial policies other places put into action to ensure performance and accountability for service delivery across the King County Regional E-911 System?

What are other cities, counties, and PSAPs doing with respect to financial management of their E-911 programs? Are King County’s challenges unique or are there larger structural issues?

How are other places choosing to fund their E-911 services?

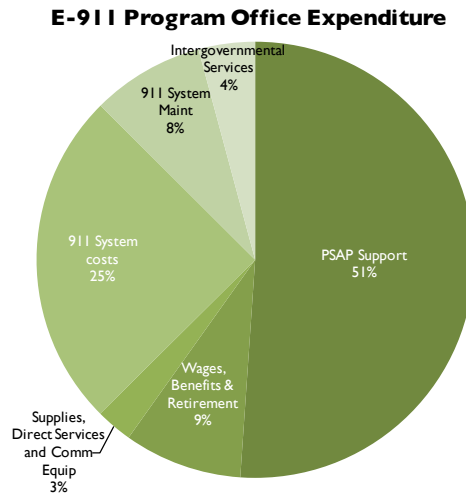
What are the financial policies that govern the expenditures, budgeting, and delivery of services for both operations and capital services?

How are other places proceeding with NG911 technology upgrades with respect to managing their financial position?

Baseline Questions

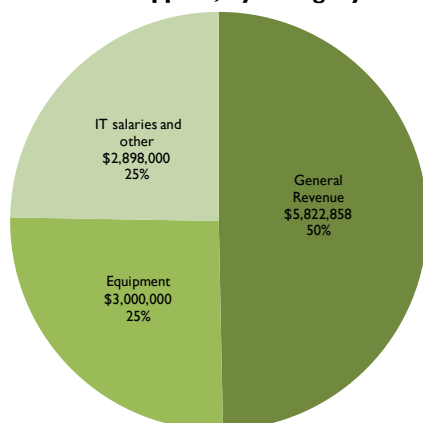
How is funding distributed now?

Revenues support the maintenance of the King County Regional E-911 System. It does so by supporting operational and capital expenditures at the King County E-911 Program Office and through direct support to the PSAPs. The chart to the right shows the current distribution of E-911 revenue. Approximately 51% of revenue supports the PSAPs with the balance supporting the King County E-911 Program Office. The level of PSAP support reflects previous decisions by the King County E-911 Program Office (the Task Force is currently reviewing information on these decisions).



Actual expenditures from 2015

PSAP Support, by Category



2016 Budgeted distribution

The direct support to PSAPs covers expenditures in three broad categories. A quarter of revenues goes to supporting equipment at the individual PSAPs necessary for system integration. Another quarter of revenues goes to FTE support for qualified IT activities. The remaining 50% of revenues can be used for approved 911-related purposes. These activities must fall within the State guidelines and King County code (the Task Force is currently reviewing information on these guidelines).

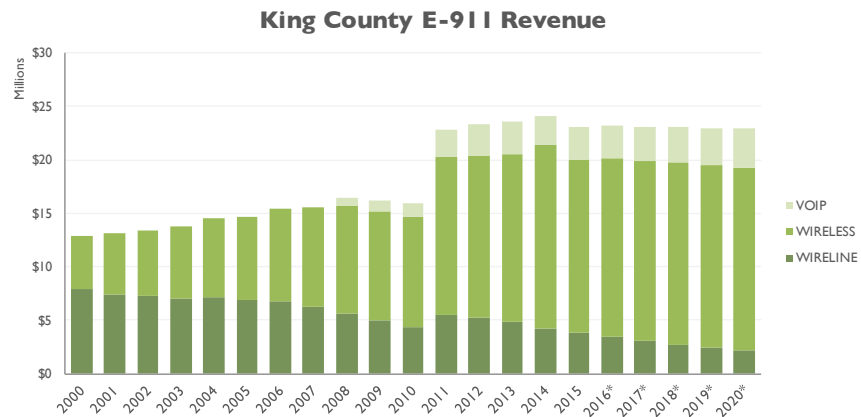
What are projections for future King County Regional E-911 System Revenue?

Revenue is forecasted to be relatively flat through 2020 (current budget forecast year). Revenue has not increased since the excise tax increase in 2011, however, little growth in the base number of phone lines was evident even before that time. While growth is expected in VOIP and wireless lines during the forecast period, these increases will not overcome the rate at which households are abandoning their wired lines.

What are the financial lessons from the 2015 King County Auditor's report on the King County E-911 Program Office operations?

The financial consultant found that the King County E-911 Program Office's financial

condition is unclear due to the commingling of operating and capital expenditures. Planned spending will need to be curtailed to match available revenue in order to avoid depletion of reserves and a potential negative financial position. The King County E-911 Program Office is moving forward with a series of initiatives to better account for its capital and operating costs. The Task Force has requested more detailed data about King County E-911 Program Office and PSAP expenses to better understand where adjustments can be made.

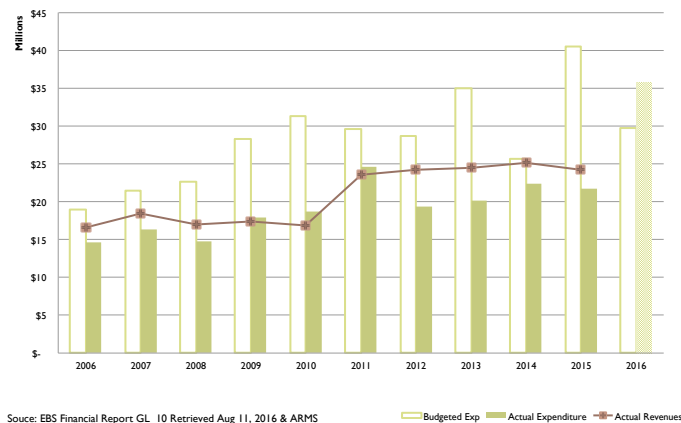


Existing Conditions

The King County E-911 Program Office budget has experienced a growing fund balance as a result of deferred or unfinished capital projects.

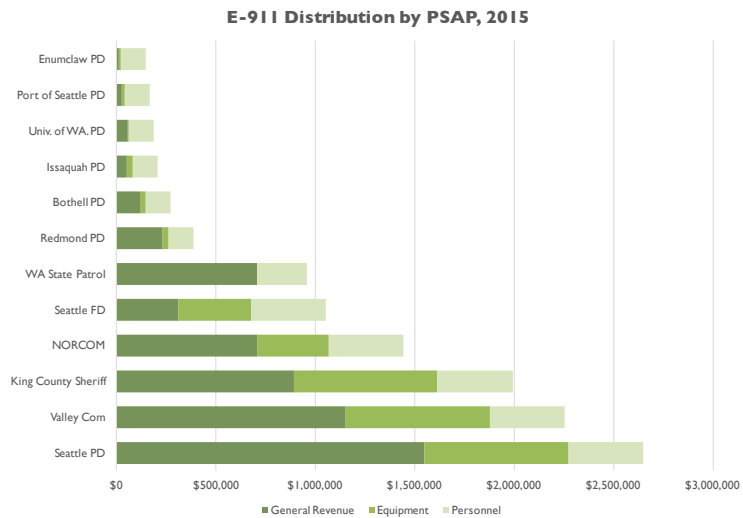
Over the past decade, the King County E-911 Program Office has had a gap between budgeted expenditures and actual expenditures. The exact source of the gap is not clear due to the past practice of commingling operating and capital expenses. However, it is thought that the bulk of the balance is due to the delay of capital projects from their initial budgeted timeline. In addition, some resources were reserved for future

NG911 planning, although the actual cost and timing for NG911 projects is not known. This gap in expenditures has led to large fund balances, currently estimated to be \$17 million by the end of 2016.



King County Regional E-911 System revenue supports the system through the PSAPs

The distribution of 911 revenues to the PSAPs is calculated through a series of formulas that are weighted by call volume. General revenue (available to fund a variety of 911-related expense) is weighted directly by call volume and augmented for large PSAPs. Revenue distribution supporting equipment use call volume to sort PSAPs into large and small categories for distribution with fixed amounts established for each category of PSAPs. Small PSAPs are funded one-half FTE for both IT and GIS. Large PSAPs are funded one FTE each for IT, GIS, and PBX/Viper Admin.



Summary of Key Issues

Financial Sustainability

Forecasted increases in operating and capital expenditures need to be evaluated for accuracy and whether alternative action is required. Forecasted growth in these expenditures is driving fiscal deficits in the future.

King County budget financial projections reveal a negative fund balance for the King County E-911 Program Office by the end of the 2022 budget biennium. The County anticipates operating and capital expenditures will consume current fund surpluses over the next three budget biennia. The Task Force is currently focused on evaluating the drivers of expenditure increases. The Task Force has received in-depth and insightful data from the King County E-911 Program Office that gives it confidence it is seeing the most in-depth assessment of the financial situation.

However, at this time we do not yet have the fullest picture of expenditures related to the King County Regional E-911 System and what specific elements are driving costs whether they be at the E-911 Program Office or PSAP level. We feel that it is imperative that we have this understanding so that we can make assessments about:

- The accuracy of future expenditure forecasts,
- Whether projected deficits are inevitable under the current revenue picture,
- Whether alternative courses of action are required, and
- How financial changes to the system might set the path to financial sustainability.

Our specific inquiry into expenditures is focused on the following issues:

- Capital Planning and Expenditures. The forecasted budget includes large increases in capital expenditures. Historic under expenditures have led to large current beginning fund

balances. It is thought that the bulk of the balances are due to years of successive delays of capital projects from their initial budgeted timeline; however, it could include unanticipated vacancies, unneeded contingencies, etc. The Task Force is seeking to better understand how the King County E-911 Program Office identifies, prioritizes, budgets, and delivers these capital projects. They would like to avoid situations in the past where significant under-expenditures occurred.

- Direct Services by the PSAPs funded by the King County E-911 Program Office. Approximately 51% of Program Office's expenditures support E-911 services at the PSAPs. Revenue distribution occurs mainly via a set of formulas weighted by call volume. Additionally, the direct service expenditures support PSAP FTEs engaged in E-911 GIS and IT activities. The Task Force is in the process of uncovering the original rationale for these arrangements, as well as the formulaic basis of the funding levels to the PSAPs. The Task Force anticipates revisiting the policy basis, funding levels, and distribution to PSAPs as part of its work program. Specifically, we are currently trying to understand what portion of total PSAP expenditures are funded by the King County E-911 Program Office as well as understanding the duties of E-911 Program Office funded FTEs (GIS/CAD; IT System Specialist and PBX/VIPER Admin) at the PSAPs.
- Financial Implications of NG911. The Technology and Operations Task Force is developing local definitions for what NG911 will mean for the King County Regional E-911 System. The Finance Task Force is concerned that such uncertainty regarding the capabilities and technology changes will be difficult to translate into concrete financial needs that both the Program Office and PSAPs can plan for. This concern is not only about understanding the increased capital costs of new technology, but also if any operating efficiencies under the new system would occur, including reduced staffing or support costs. If NG911 is not fully defined, it is difficult to make a financial commitment to spending with uncertain timing and costs.
- Program Office Staffing and Services. The Program Office has recently reorganized some of its services and increased its employee count. They have recently transferred 6 employees to KCIT and the E-911 Program Office will transfer funds to support the employees. The office has also hired additional administrative and project management staff necessary to administer the office and deliver projects. The Task Force is in the process of understanding the motivations and financial implications of these changes.
- Reserve Policies. The Task Force has raised questions about the process and assumptions that the E-911 Program Office uses to set its fund reserve. The Task Force believes that maintaining a reasonable level of unreserved fund balances can provide insurance against unanticipated expenditures and revenue shortfalls moving forward. These reserve policies should be set with regard to the purpose and appropriateness of target levels.
- Contracting with Vendors. The Task Force will be examining the process by which the E-911 Program Office contracts with vendors for services. The Task Force is in the process of better understanding policies that govern vendor procurement and management to ensure that more advanced, strategic practices are in place.

Revenue adequacy of existing sources will need to be evaluated as part of a financial sustainability plan.

The phone line excise tax rates are fixed nominally to the number of phone lines. The resulting revenue yield has been flat going back to the mid-2000s. The gains in the growth of VOIP and wireless phones lines have been offset by the reduction in phone lines from households who have phased out their landlines. The Task Force is concerned that the revenue adequacy of the excise tax alone may not be sufficient to meet the current costs of service delivery, let alone the financial demands required to implement new technology, capabilities, and services. The Task Force has raised questions regarding the excise tax distribution by the State. It is our understanding that the State is responsible for collecting the tax, but more clarity is needed to confirm the State is accurately capturing all the revenue at the county level and distributing it to King County appropriately.

The Task Force is currently evaluating the nature and scale of operating and capital expenditures to better understand what is likely to drive future expenditures; however, members of the Task Force are concerned that inflation and the growth in labor and capital costs might pose a key challenge for how the King County E-911 Program Office is currently funded. The Task Force is investigating how other places fund these services and will consider if new revenues are necessary to bring funding in line with needed service costs.

*Core Services***More clarity of financial responsibilities and associated costs of the King County Regional E-911 System is needed.**

There is ambiguity about the appropriate roles of the King County E-911 Program Office and the PSAPs in supporting the Regional E-911 System. Further, the review is assessing the policy basis that determines what core services the Program Office is required to provide, and beyond those costs, what are the financial implications, if any, to individual PSAPs. A definition of the core services of the Program Office is necessary to understand delineation of costs among the Program Office and PSAPs. The Task Force has observed some inconsistency about how each PSAP allocates their share of King County Regional E-911 System funding. Mutual agreement is needed on how the E-911 Program Office and PSAPs use their funds most effectively and efficiently. There is a need for system-wide standards and policies on how King County Regional E-911 System funded FTEs in PSAPs are supporting E-911 services. The Task Force is investigating how the E-911 Program Office and each PSAP spends their share of funding, including E-911 Program Office funded FTEs. This may reveal the similarities and inconsistencies across PSAPs, and inform whether allocation decisions should be normalized system-wide as fundamental to the E-911 Program Office's role in delivering services. However, role clarity will also need a measure of flexibility to accommodate evolving system needs and changes in resources.

*Financial Policies & Accountability***Clear financial policies and accountability are needed.**

The Task Force will review and recommend updates to financial policies related to budgeting and accounting, and, potentially the distribution policies for support of direct services at the PSAPs. The historic commingling of capital and operating budgets masked some long-term issues. In some cases, it appears that financial policies are lacking, outdated, or absent altogether. The Task Force believes there need to be clear measures to provide accountability through clear financial management policies, timely reporting, and audits. Specific areas of improvement thus far include the need for improved internal controls and oversight to review and authorize outlays in the E-911 Program Office and funds distributed to the PSAPs through the Program Office.

Distribution of Funding

A reasonable, clear, and transparent system for distribution of funding is essential, and must evolve with changing technologies, operations, and service demands.

Funds are distributed using a formula and metrics established by the King County E-911 Program Office, but in the past the PSAPs have lacked a full understanding of those formulas. Components of the formulas and their implications should be clear. For example, complications can arise when funding is tied to 911 call volume when individual jurisdictions have varying efforts to divert non-emergency calls from 911. All parties should have a shared understanding of how the funding decisions are made and the baseline costs. Transparency is needed for policies regarding the distribution of general revenue, technical personnel, and equipment support to PSAPs.

Appendix I: Strategic Plan Shared Vision, Guiding Principles, & Goals

The King County Regional E-911 Scoping Committee identified Guiding Principles and Goals for the strategic planning process and the resulting King County Regional E911 System. These are:

Shared Vision — for the Regional E-911 System

Consistent with national best practices, King County’s Regional E-911 System will be among the best in the country in terms of:

- Rapid and effective routing of requests for service
- Efficient use of public resources
- Effective deployment of evolving technology
- Adherence to the guiding principles (below)

Guiding Principles — for the Regional E-911 System

4. Process

- g. **Transparency** – Transparency in operations, procurement, decision-making, and financial management
- h. **Project Management Principles** – Keep current with industry standards in terms of project management and operating principles (PMP)
- i. **Collaboration** – Maintain a collaborative approach among all jurisdictions and project partners, including open and regular communication
- j. **Predictability** – Predictability in operations and decision-making
- k. **Advocacy** – Advocate at all levels to influence best practices and appropriate resources in the public and private sectors
- l. **Inclusion** – includes a broad array of voices

5. Finances

- d. **Fiscal Responsibility** – Equitable, transparent, and responsible fiscal management
- e. **Financial Sustainability** – Manage toward long-term financial sustainability
- f. **Cost Effective** – Leverage resources to provide the best possible services

6. Standards

- d. **National Best Practices** – Stay in step with national best practices in operations
- e. **Performance Metrics** – Track progress with specific and transparent metrics
- f. **Continuous Improvement** – Respond to recommendations, and continue to seek opportunities for improvement (including the King County Auditor’s 2015 report)

Goals — for the Regional E-911 System

As part of the strategic planning process, develop a dashboard of outcome metrics to monitor progress toward these goals, to be in alignment with the guiding principles above.

- 7. **No Request Lost** – Never lose track of a request for assistance
- 8. **Prompt Response** – Promptly route and respond to every request for assistance to promote rapid dispatch
- 9. **Seamless System-wide Technology** – A county-wide system that is fully integrated and interoperable, minimizing transfers and ensuring reliability
- 10. **Meet or Exceed Industry Standards** – A county-wide system that meets or exceeds current industry standards and is continuously improved to adapt to evolving technology and needs
- 11. **Equity** – Equitable access to the E-911 system by all communities and individuals, recognizing and addressing the obstacles faced by specific groups.
- 12. **Secure, Resilient & Survivable** – A county-wide system that is secure, resilient, and survivable

Appendix II: Technology & Operations Background & References

A complete listing of National Emergency Number Association (NENA) Standards and Documents can be found at <http://www.nena.org/page/standards>

Key Standards and Documents related to the deployment of NG911 systems and strategies include:

NENA i3 Solution – Stage 3 – This web page describes the migration actions that build towards the full implementation of the i3 end-state, which is defined in the standards document discussed below.

http://www.nena.org/?page=i3_Stage3

NENA Detailed Functional and Interface Standards for the NENA i3 Solution (NENA-STA-010.2-2016) – This document describes the “end state” of an IP-based Emergency Services IP Network (ESINet) once full migration from the legacy circuit-switched technologies for call routing and delivery has been completed.

http://c.ymcdn.com/sites/www.nena.org/resource/resmgr/standards/NENA-STA-010.2_i3_Architectu.pdf

NENA Security for Next-Generation 911 Standard (NENA 75-001) – This document identifies the basic requirements, standards, procedures or practices to provide the minimum levels of security applicable to NG911 entities.

http://c.ymcdn.com/sites/www.nena.org/resource/collection/9652017C-3DDB-4F48-91BE-57871A0E68E6/NENA_75-001-v1_NG-Security.pdf

NENA Next Generation 911 Security Audit Checklist (NENA 75-502) – This is a companion document to NENA 75-001 and provides detailed checklists to audit conformance to the Standard.

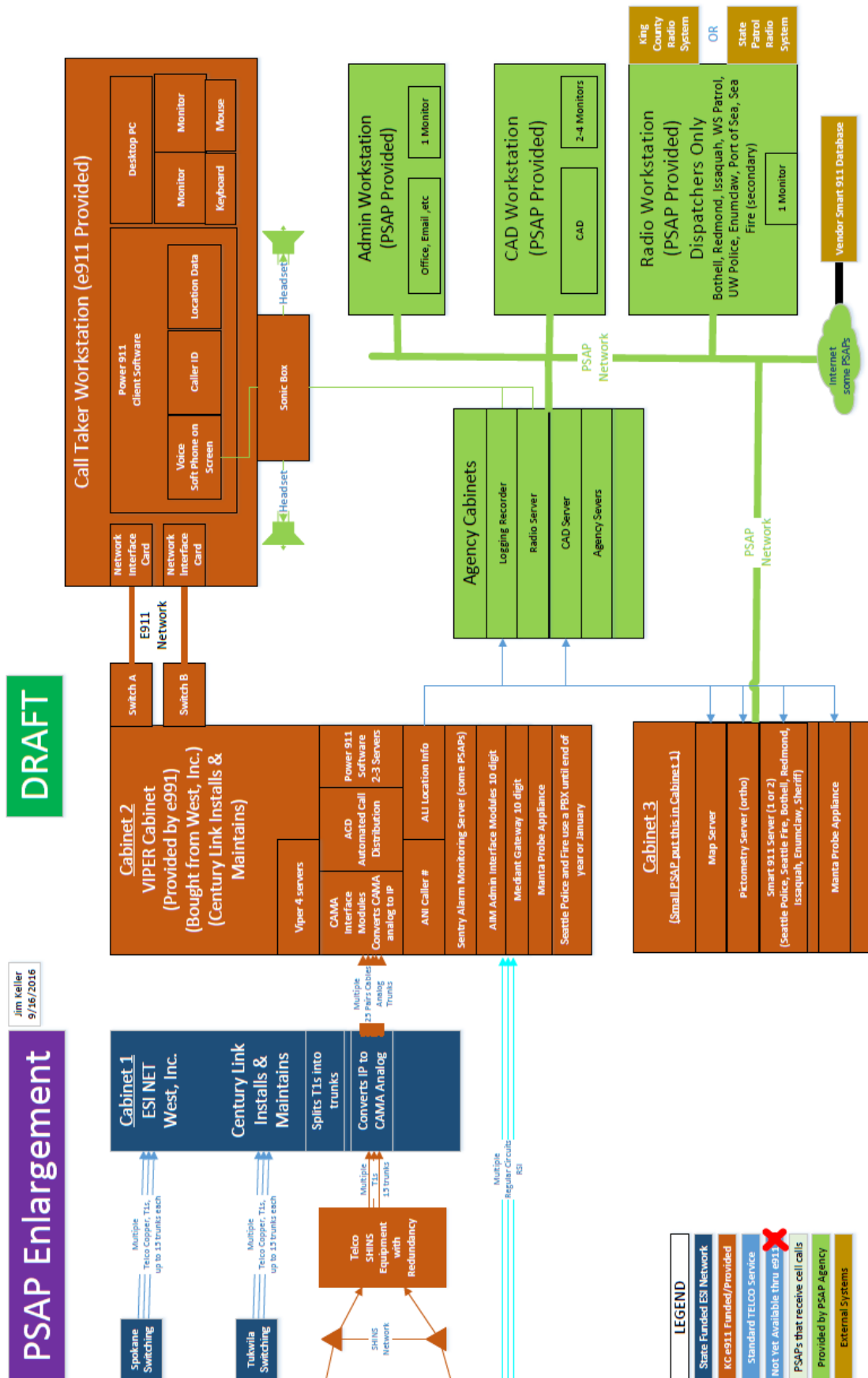
http://c.ymcdn.com/sites/www.nena.org/resource/resmgr/Standards/NENA_75-502.1_NG-SEC_Audit_C.pdf

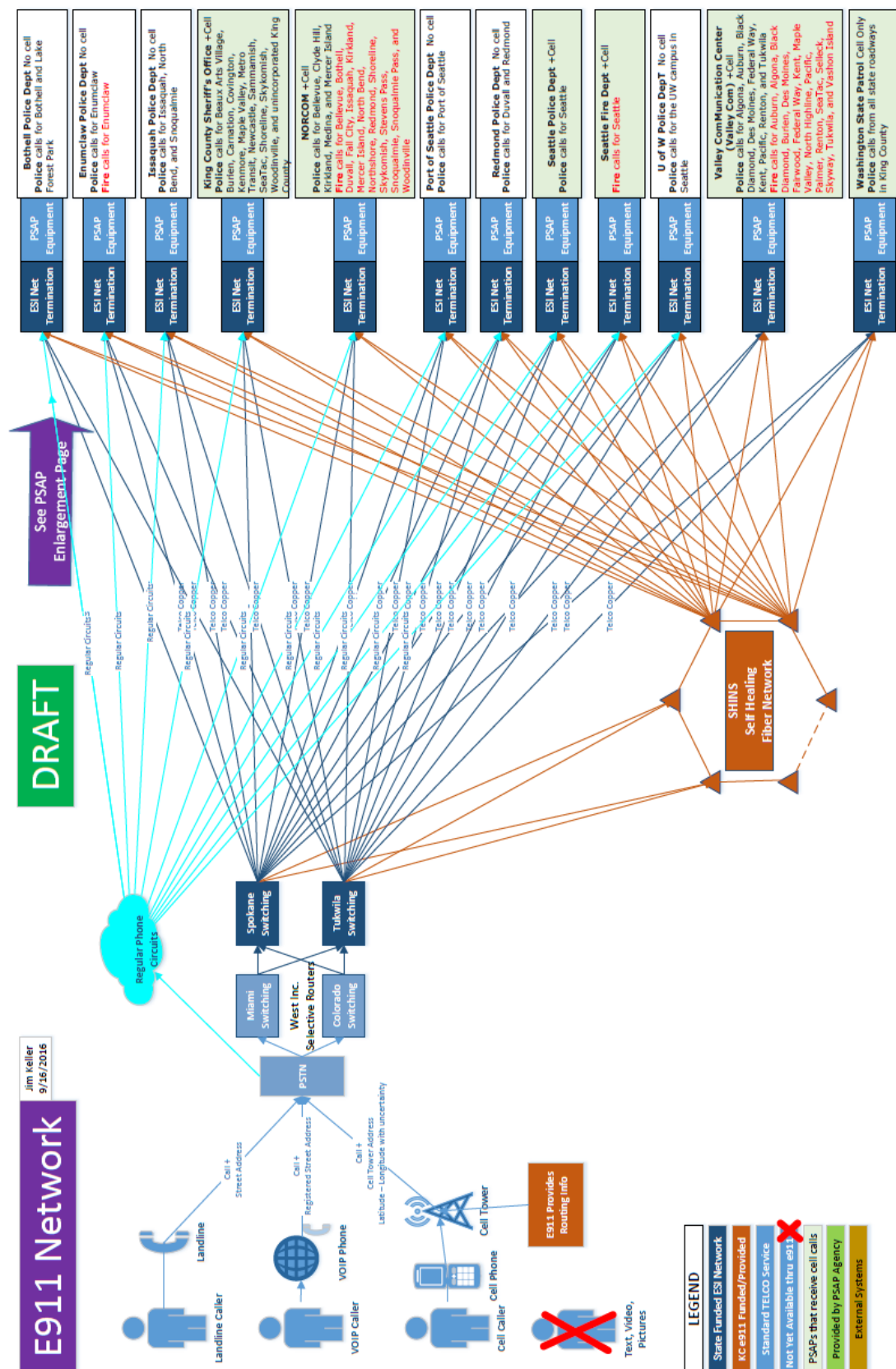
NENA VoIP Characteristics Technical Information Document (NENA 08-503.1) – This document provides an overview of Voice over IP technology.

http://c.ymcdn.com/sites/www.nena.org/resource/resmgr/Standards/NENA_08-503.1_VoIP_Character.pdf

King County Security Standards

Current King County Regional E-911 System Architecture (next two pages)





D- GOVERNANCE TASK FORCE REPORT

Draft Governance Recommendations Version 7 8/31/17

KC E911 Strategic Plan

Background

In 2016, King County initiated a strategic planning process for the King County E911 system. The Strategic Planning process is scheduled to occur through 2017, with final recommendations to be delivered to the King County Council in December. The planning process involves three task forces which are Technology and Operations, Finance, and Governance.

The formal task designated to the Governance Task Force from the scoping process was to define an ongoing decision-making or governance structure for the Regional E-911 System, including organization chart; decision structure; accountability; responsibility; and conflict resolution process.

Auditor's Report

The King County Auditor's report on the E-911 system was one of the catalysts for the scoping and strategic planning process. Of the report's main findings, a governance system that provided formal, clear, and transparent decision making structure was needed.

The Governance Task Force reviewed the findings and recommendations of the Auditor report and incorporated those into their workplan.

Issue Brief

The first meetings of the Task Force allowed members to identify issues with the current system. This resulted in an issue brief that established the basis for the work of the Task Force and provided guidance for future meetings.

Case Studies

The initial work of the Task Force included a review of other regional E-911 governance structures to gain a better understanding of how other agencies were structured, how PSAPs were represented, how decisions were made, if authority was delegated or advisory, and how operations and capital were funded. These case studies were used to determine if best practices existed and what experiences of other jurisdictions could be applied to improve E-911 governance in King County. A set of questions and evaluation criteria were used for each jurisdiction. E-911 structures that were studied included the Interim Advisory Group for King County E-911; Otsego County, New York; Palm Beach County, Florida; Tarrant County 911 District, Texas; and Ramsey County, Minnesota. All the 911 systems interviewed had similarities in their governance structures. In all cases authority was delegated by the state to counties or a regional authority and representation by PSAPS or local jurisdictions was advisory to the county or regional system. There was also a variance in state involvement with 911 systems, ranging from Palm Beach which had a high level of state oversight and control, to the Tarrant County District, which is a regional partnership with little state oversight.

In addition, the Task Force engaged in a discussion of authorities and voting structures of other regional governance structures in the Puget Sound region not related to 911. Those were the Puget Sound Regional Council, the King County Growth Management Council, the Puget Sound Emergency Radio Network (PSERN), and the Emergency Medical System Advisory Committee.

The full review of Case Studies is included in the appendix to this report.

Scoping

The scoping process developed a list of questions and goals to be addressed by the Governance Task Force. These were intended to be a guide for the Task Force, and to ensure that the group addressed certain key issues. The definition of the Regional King County E-911 system, Governance goals, and questions from scoping are as follows:

System Definition:

The Regional E911 System is operated by the E-911 Program Office in the County's Department of Information Technology in cooperation with twelve independent Public Safety Answering Points (PSAPs), with the E911 Program Office routing requests and the PSAPs interrogating callers and dispatching services. The Regional E911 System is funded by excise taxes levied on landline, wireless and voice-over-internet phones.

Governance Goals:

- Equity – especially regional equity
- Transparency
- Project Management Principles (e.g., Lean and Lean/Six Sigma Management)
- Collaboration
- Predictability
- Fiscal responsibility
- Financial sustainability
- Cost effective
- Performance metrics
- Continuous improvement
- Public accountability
- Consensus

Questions and Issues:

- What are others doing for governance of regional E-911 systems with multiple operating groups?
- What is the current governance structure (organization chart; decision structure oversight; accountability; responsibility, conflict resolution process)?
- What are the governance lessons from the 2015 King County Auditor's report on E-911 operations?
- What is the definition of the King County Regional E-911 System?
- What is the management structure for the King County Regional E-911 System, in terms of authority, oversight, operations, accountability, responsibility, and performance monitoring?
- What is the major decision-making structure for the King County Regional E-911 System, including process management, research, input, and authority?
- What is the conflict resolution process for the King County Regional E-911 System?
- What is the stakeholder engagement structure for the King County Regional E-911 System, including input into decisions, reporting, and performance monitoring?

Process

The governance task force held 10 meetings over the course of 10 months.

- **Meeting 1** – Review of Auditor’s report, issue identification, discussion of current standard practices, review of some existing statutory authorities
- **Meeting 2** – Review of issue brief document, update on finance, review of a preliminary list of governance models, discussion on aspects of models to research
- **Meeting 3** – Review of governance models research findings, questions and discussion
- **Meeting 4** – Review of drafted principles, discussion on membership and voting
- **Meeting 5** – Continued discussion on principles, membership, voting
- **Meeting 6** – Continued discussion on principles, membership, voting, and subjects of authority.
- **Meeting 7** – Revisit Voting Structure and Authority
- **Meeting 8** – Revisit Voting Structure and Authority
- **Meeting 9** – Revisit Voting Structure and Authority, revisit old principles and discuss new principles.
- **Meeting 10** – Revisit subjects and structure, including committees.

Governance Recommendations

Principles

Over the course of several meetings the Task Force discussed, developed and agreed to a set of principles that a recommended governance structure would need to embody. These principles were intended to amplify the goals established in the scoping process.

- Every PSAP has a seat at the table
- A form of proportionality shall be used for voting purposes
- A form of consensus decision making shall be used
- The structure must continue to function if the system changes
- The Governing Board will make informed and timely decisions for the good of the regional system
- The Governing Board will inform and advise on the regional 911 system
- The Governing Board will be fully transparent in decision making
- Governing Board members should advocate at all levels to implement best practices and appropriate resources in the public and private sectors
- The Governing Board shall maintain a collaborative approach among all jurisdictions and project partners, including open and regular communication
- The Governing Board shall review and consider the results of outreach to diverse communities that are served by the Regional King County E-911 system
- The Governing Board shall continue to seek opportunities for improvement

Authority

The Governing Board of the King County E-911 system shall inform and advise the King County E-911 Program Office, the King County Executive, and the King County Council on the regional King County E-911 system.

Voting

The Governing Board shall strive to reach consensus on all issues and any recommendations to the King County Program Office, the King County Executive and the King County Council. Consensus is assumed

unless a member of the board that is present at the meeting asks for a formal vote. A call for a vote must be seconded by another board member for the vote to proceed.

If a board member who is present at the meeting requests a vote, and that vote is seconded by another board member, the following voting procedure shall apply.

A quorum of the board must be present at the meeting. A quorum is defined as 50% plus one of the total board membership.

A majority action of the Governing Board requires the yes votes of 40% of board members present and voting that also represent 60% of call volume of the King County E-911 system.

When a vote of the Governing Board occurs, the members of the board voting in the minority may file a dissenting recommendation that shall also be forwarded with the action of the majority. The dissenting recommendation must be provided within 10 calendar days to be submitted with the action of the majority of the board.

The governing board should adopt rules to establish procedures for notice and timing of votes.

For purposes of calculating the 40% of board members present and voting the result shall be rounded up to the next whole number if there is a fractional outcome equal to .5 or greater and shall be rounded down if the fractional result is less than .5.

For purposes of calculating call volume percentages the King County E-911 Program Office shall annually on or before January 15th provide to the Governing Board updated total call volumes for each PSAP.

Decision Making and Dispute Resolution

For all matters that are within the purview of the King County 911 Governing Board (Governing Board) the King County E-911 Program Office (Program Office) shall provide background, briefings, data, analysis, and financial review to the Governing Board to facilitate its review and recommendations to the Program Office. The Governing Board may also initiate proposals that are within their authority and the Program Office shall provide background, briefings, data, analysis, and financial review to facilitate review and recommendation by the Governing Board.

The Program Office and the Governing Board shall engage in a deliberative process with the objective of reaching a consensus decision of the Governing Board. Lacking consensus, and upon the request of a member with the appropriate second, the Governing Board may also vote and make a recommendation to the Program Office.

Concurrence:

If the Governing Board and Program Office concurs, the matter will be implemented, or if required, forwarded to the King County Executive (the Executive).

When an issue requires an action by the Executive, the recommendation of the Governing Board shall be provided to the Executive in a form as required by the Executive. When the action of the Executive is consistent with the recommendation of the Governing Board, the matter may be implemented or transmitted to the King County Council (the Council).

Executive Rejection or Modification of Recommendation:

If the Executive rejects or modifies the recommendation, the Governing Board shall be notified in writing with a description of the action and justification for the decision. The Governing Board may, within 10 calendar days, respond in writing to the Executive either concurring with the action or making an appeal for reconsideration which could include a request for a meeting with the Executive. The Executive then has 10 calendar days within which to respond to the Governing Board.

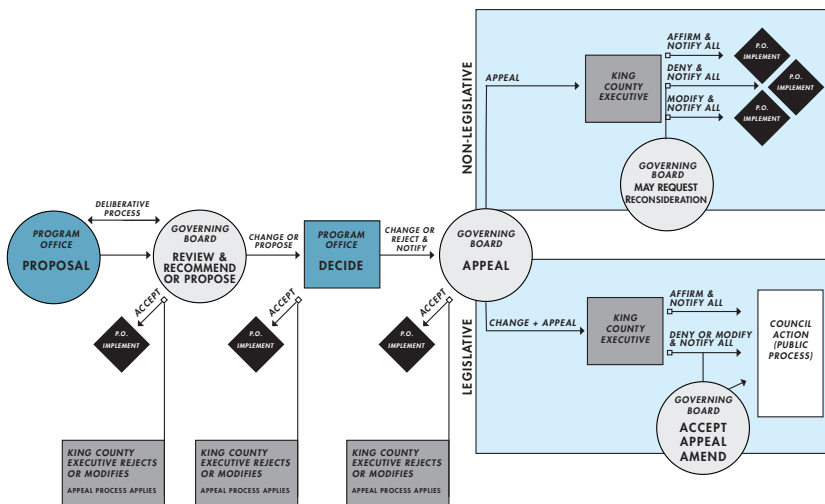
Program Office Rejection or Modification of Governing Board Action:

If the Program Office rejects or modifies a Governing Board recommendation, the Program Office must notify the Governing Board in writing within 10 calendar days with a description and justification for the Program Office action. The Governing Board shall have 10 calendar days to consider the Program Office decision before the Program Office takes any further action. Within that time the Governing Board may accept the Program Office position, engage in discussions with the Program Office seeking a mutually agreeable compromise, or appeal to the County Executive. Preparation of an appeal is the responsibility of the Governing Board.

On appeal, the Executive shall consider the recommendations of both the Governing Board and the Program Office. The Governing Board shall be notified of the Executive's decision in writing with a description of the action and justification for the decision. Upon receipt of that notification the Governing Board may, within 10 calendar days, respond in writing to the Executive either concurring with the action or to make an appeal for reconsideration which could include a request for a meeting with the Executive. In the case of an appeal for reconsideration, the Executive then has 10 calendar days within which to respond to the Governing Board.

Legislative Actions of the King County Council

In matters that require the approval of the Council the Program Office and the Executive shall follow all the same procedures as described before transmitting legislation to the Council. Upon Executive transmittal of legislation, the Governing Board may inform the Council of their support, opposition, or request for amendment through the public legislative process of the Council. The County Executive shall make all appropriate records of the Governing Board and the Program Office available to the Council and to the public to inform the Council process.



* THE GOVERNING BOARD WOULD NEED TO DELIBERATE THE BUDGET WITHIN THE COUNTY BUDGET PROCESS AND TIMEFRAME.

Roles and Responsibilities

The Governing Board of the King County E-911 system shall inform and advise the King County E-911 Program Office, the King County Executive, and the King County Council on the regional King County E-911 system on subjects that affect the regional King County E-911 system and operations and finances of the PSAPs.

Those subjects shall include but are not limited to the following:

The proposed biennial budget, spending plans and schedules for operations and maintenance costs, system and technology changes, platform and networking enhancement and modernization, strategic projects associated with NG-911 technologies and projects, discretionary Program Office or PSAP requests, implementation of the strategic plan, financial plan monitoring and modification, revenue distribution formula to PSAPs, and establishing and monitoring performance standards and measures. (See figure below).

Governing board is informed and makes a recommendation

- Proposed E-911 system and Program Office biennial operating and capital budget*
- Projects and expenditures to enhance, modernize, or upgrade the E911 system.
- Federal and state legislative strategies
- System performance standards, measures, and monitoring
- Revenue and finance plan monitoring and revisions
- Strategic project proposals, projects, expenditures, implementation, and schedules associated with NG-911 technologies.
- Strategic planning for the regional E-911 system.
- Modifications to the funding formula or changes to revenue distributions to PSAPs
- Discretionary Program Office or PSAP requests

* The Governing Board would need to deliberate the budget within the County budget process and timeframe.

Program office may inform the governing board but no board action is required

- Expenditures within the authorized biennial budget to support operation, maintenance and security of the E911 platform and network to the PSAPs
- Representation at local, state and national associations and committees
- Communications, social marketing strategies, education campaigns, events, training materials, language and interpretation services related to the regional system but not PSAP interpretation and language services.
- Administration, project planning, budget and management, vendor delivery oversight and compliance on approved projects. Results of outreach and engagement with community members who represent the diversity of people using the E-911 system

The Governing Board may also refer to the Core Services, which have been defined as the first priority functions of the King County E911 Program Office. This list may provide guidance to the governance body as it deliberates capital, operating, and funding priorities in the future.

Core Services:

Network, System, & Equipment

Call delivery from State 911 network to PSAPs; E911 phone maps; location data; GIS data; local network, security, and trunking.

Operations & Maintenance

Hardware for network, security, and telephony equipment; asset tracking; software licensing, updates, upgrades, fixes; vendor and PSAP coordination; transferring funds to PSAP for technical staff, PSAP operations, and equipment.

Project & Vendor Management

Project planning, budget and management; vendor delivery oversight and compliance.

System Access & Education

Social marketing strategies; education campaigns, events, training and materials; language interpretation services.

Regional Leadership

Local, state, and national associations and committees; legislative efforts; new technology and trends.

Administration & Finance

Program, vendor, and asset management; policies; staffing; data analysis; communications; budget; finance; strategic planning.

Governing Board Structure

Each PSAP shall have one representative appointed to the Governing Board by the Director of the PSAP. The Director may appoint themselves. Length of term on the Governing Board shall be determined by the appointing authority. Designated alternates may participate in Governing Board discussions but may not vote or participate in consensus decisions in place of the appointed representative.

The Governing Board shall adopt by-laws to establish, officers, meeting schedules, committee structures, voting procedures, and other rules necessary to conduct the business of the board.

The King County E-911 Program Office will provide staff support for the Governing Board to hold and conduct their meetings.

Governance Recommendations Implementation

The King County Executive should transmit by January 15, 2018 and the Council should by March 31, 2018 adopt a motion approving the Regional E911 Strategic Plan as recommended by the Leadership Group.

The King County Executive should transmit by January 15, 2018 and the Council should adopt by March 31, 2018 an ordinance establishing the advisory Governing Board as recommended by this Strategic Plan.

The Governing Board should be tasked with assuming the procedures and responsibilities of governance as described in the Strategic Plan.

The King County Executive should work with the Governing Board to draft a new interlocal agreement with the objective of all PSAPs having adopted the final interlocal agreement before the end of 2018.

E- TECHNOLOGY & OPERATIONS TASK FORCE

FINAL REPORT

King County E-911 Strategic Plan

Technology & Operations Taskforce Draft Final Report

The Technology and Operations Taskforce was established to lead the strategic planning activities related to understanding and documenting local 9-1-1 needs within King County; developing an understanding of local, state and national trends and standards influencing 9-1-1 in the years ahead, including the continuing evolution of Next Generation 9-1-1 (NG911); and developing a framework to guide the future architectural configuration and operation of King County's 9-1-1 system into the future.

The Taskforce was Co-Chaired by Bill Kehoe (King County's CIO) and Chelo Picardal (City of Bellevue CTO), and included representatives from the various entities that composed the Planning Group within the overall Strategic Planning structure.

Technology and Operations Taskforce	
Taskforce Member	Representing
Bill Kehoe, Co-Chair	King County Executive
Chelo Picardal, Co-Chair	City of Bellevue
Jess Nelson	Large PSAPs
Micki Singer	Small PSAPs
Jessica Sullivan	King County Sheriff's Office
Tim Osgood	Fire Districts
Gregory Hough	City of Seattle Council
Krista Camenzind	King County Council
Russ St. Myers	City of Seattle PSAPs
Ron Tiedeman (formerly Dee Hathaway)	Sound Cities
Deb Flewelling	King County E-911 Program Office
Kellie Shapard	Hearing Impaired Community
Kenn Moisey	State of Washington E-911

Definitions

The Taskforce established several definitions for their work to provide some continuity in discussions within the Taskforce and with the overall Strategic Planning process.

Next Generation - (NG911):

For the purposes of this strategic plan, the working definition of NG911 is:

The transition of the 911 system from analog to digital communications technology, reflecting today's internet-based world.

This transition of analog to digital communications technology opens new capabilities beyond voice to deliver text, photo, video, and data from a caller to a 911 call center (PSAP) and potentially to a responder. Text and video communications – in particular – can impact accessibility to 911 for individuals with speech and hearing disabilities. NG911 also enhances PSAP operations with more accurate call location and routing, and enables connections between PSAPs that improve call transfers and interoperability for greater overall resiliency. NG911 is driven by national and statewide efforts, and each Regional E911 program can decide on which NG911 capabilities best align with its priorities, customer expectations, resources, and technology portfolio, as well as when and how those new capabilities should be phased in.

Emergency Services Internet-Protocol Network (ESInet; ESInet-II):

The statewide system for routing emergency calls. The State of Washington is in the process of deploying a new ESInet, often referred to as ESInet-II.

Feature:

A distinctive attribute or aspect of some technology. In this planning context, *features* are used within the PSAPs as part of answering and processing 911 calls.

Function:

The basic purpose of some element of the technology. In this planning context, *functions* are NG911 capabilities within the ESInet or the Regional E911 telephone system.

Interoperability:

The ability of computers, technology systems, or software to exchange and make use of information

NENA: National Emergency Number Association, a standards setting body for 911 related technology and operations.

Public Safety Answering Points (PSAPs):

Answering locations for 911 calls. In King County, the twelve PSAPs are governed and largely funded by the independent jurisdictions and agencies they serve.

Reliability: The quality of being trustworthy or of performing consistently well

Resilience: The ability to prepare for and adapt to changing conditions and withstand and recover rapidly from disruptions. Such disruptions might include deliberate attacks, accidents, or naturally occurring incidents.

Architectural Principles

The Taskforce first focused their attention on developing a set of Architectural Principles. Establishing these Principles early in the process provided the Taskforce with a common reference framework as further work was done to identify Strategic Objectives, Actions and Performance Metrics that could be used to guide King County's 9-1-1 environment into the future. The eight Architectural Principles are summarized below, and a complete overview of each principle is provided in Exhibit A.

1. **Public Safety** – Ensure that 911 services protect the public's safety above all else.
2. **Security** – All systems and solutions will need to meet at least the minimum levels of security defined.
3. **Fair and Equitable** – Provide fair and equitable access to 911 services so that communities across King County receive and perceive value.
4. **Cost Effectiveness** – Financial decisions are the most cost-effective solutions consistent with documented needs.
5. **Capacity** – The system is designed to meet peak demands without service interruption.
6. **Availability** – Solutions are available at all times without service interruption.
7. **Interoperability** – Software and hardware conform to defined standards of interoperability for data, applications and technology.
8. **Convergence** – Converge toward common solutions, approaches and standards.

Summary of Strategic Objectives, Actions and Metrics

With Architectural Principles in place, the Taskforce then established several working groups to develop deeper understandings on specific topic areas. These working groups conducted their own series of research and working meetings, and briefed the Taskforce on their findings and observations during bi-weekly Taskforce meetings. The five working groups are described below.

1. **Next Generation 911 (NG911) Readiness** – Preparing for the emerging capabilities of NG911 (e.g., text, photos, video, telematics, etc.) with a roadmap that adopts and adapts to technology changes, and balances operational needs with improved service and cost effectiveness.
2. **Integrated and Interoperable Systems** – Ensuring systems are integrated effectively to achieve reliable interoperability across organizations and functions in delivering seamless 911 services across the region.
3. **Security and Resiliency** – Protecting the 911 call flow, beginning at the State's ESInet, continuing through the various systems and transport mechanisms, and arriving at the PSAPs, while also ensuring the overall resiliency of the E911 systems and operations.

4. **Optimized Operations** – Providing reliable 911 services across King County that meet or exceed applicable standards by providing a combination of hardware and software systems, databases, networking and operational support that accurately locate and route calls to King County PSAPs delivered from the State ESInet.
5. **Accessible and Equitable Service** – Increasing equitable access to the 911 services for all communities and individuals served, with specific focus on lessening obstacles faced by groups with unique needs.

Each of these working groups concluded their work by identifying a set of Strategic Objectives, Actions and Metrics that were then reviewed and refined by the full Taskforce. The table below summarizes these Objectives, Actions and Metrics and the complete version of this table is included in Exhibit B.

Technology and Operations Strategic Objectives, Actions, & Performance Metrics

Categories	Objectives (what)	Actions (how)	Measures & Targets (how many)
NG911 Readiness	Objective #1: Adhere to Standards	NENA i3 Standards NENA Network & Interoperability Standards ESInet Standards	Ongoing monitoring of Standards and assessment of systems against those Standards
	Objective #2: NG911 Features	NG911 Features: – text-to-911 – enhanced text-to-911 – telematics – “over-the-top” apps Evolution of Standards Decision Criteria Implementation Timeline	Ongoing monitoring of Standards and assessment of systems against those Standards
	Objective #3: NG911 Functions	NG911 Functions: – ESInet-II Completion – geospatial routing – SIP call transport – end-to-end security – policy routing function – ADR functionality – location information – agency locator support Evolution of Standards Implementation Timeline	Ongoing monitoring of Standards and assessment of systems against those Standards

Categories	Objectives (what)	Actions (how)	Measures & Targets (how many)
	Objective #4: Evaluate and Adopt a System Architecture	Identify Options Review Options against Architectural Principles Review Options on Financial Criteria	Completed during this strategic planning process
Integrated and Interoperable Systems	Objective #1: Interoperability Features	Identify Options: – Carrier Diversity – High Availability – Survivability – Virtual PSAPs – Mobile PSAPs – Real-time Data Capture and Analysis Evolution of Standards Implementation Timeline	Ongoing monitoring of Standards and assessment of systems against those Standards
	Objective #2 Interoperability Functions	Identify Options: – Existing Structure – PSAP Needs – Bottlenecks – Potential Efficiencies – Routing Protocols – Data Protocols Evolution of Standards Implementation Timeline	Ongoing monitoring of Standards and assessment of systems against those Standards
Security and Resiliency	Objective #1: Security Standards	Staffing & Funding Certification Process Security Awareness Training	Annual staff security training: 75% in <u>2018</u> , 85% in <u>2019</u> , and 100% in <u>2020</u> +.
	Objective #2: Security Program	Security Policies Staffing & Funding	Governance structure in <u>1Q 2018</u> .
	Objective #3: Operations and Architecture	Implement IT Best Practices	Implement a process to measure key performance.
	Objective #4: Vendor Management	Vendor Management Best Practices Quarterly Reports	Include the standard language in all new vendor contracts and RFPs

Categories	Objectives (what)	Actions (how)	Measures & Targets (how many)
Optimized Operations	Objective #1: Standards and Policies	Demarcation Points Standards & Policies Governance	Routine review of E911 Program and PSAPs conformance
	Objective #2: Delivery Framework	KCIT Delivery Framework Project Management Standards	Creation and utilization of these delivery frameworks
	Objective #3 Operational Framework	KCIT Operational Framework Problem Management	Creation and utilization of these operational frameworks
	Objective #4 Business Continuity Management	KCIT Business Continuity Management KCIT Coordination	Creation and utilization of these BCM strategies
	Objective #5: Call Routing and Delivery	Routing Criteria Periodic Review	Creation and utilization of these call routing strategies.
Accessible and Equitable Service	Objective #1: Public Education and Outreach	Maintain and increase educational outreach Partner with community organizations Partner with organizations that that innovate with special needs communities Share community feedback with other agencies	Within the 1 st year of this Plan, create a periodic reporting mechanisms to demonstrate these activities are being accomplished.
	Objective #2 Reducing Barriers	Partner with PSAPs to continue to enhance training for call takers Support access to phone services for low-income people	Within the 1 st year of this Plan, develop mechanisms to routinely gather community feedback and identify training needs. Then, in the 2 nd year, develop a process with the PSAPs to deliver training as needed.

Categories	Objectives (what)	Actions (how)	Measures & Targets (how many)
	Objective #3: Modernizing Technology	<p>Implement Text-to-911 and similar enhancements as they become available and stable</p> <p>Seek ongoing feedback about how E911 technologies are meeting community needs</p>	<p>Complete the implementation of Text-to-911 by Q1 2018.</p> <p>Within the 1st year of this Plan, develop mechanisms to gather community feedback on the effectiveness of new solutions, and then expand this effort to include new and innovative technologies when appropriate.</p>

Detailed Discussion of Objectives, Actions and Metrics

The following sections outline the current status, objectives, actions, and performance measurements and targets for these categories. Each section begins with an overview of the E911 system's current state and in-progress initiatives. This is followed by a list of objectives with actions and recommended performance metrics and targets if these can be determined at this time.

Next Generation 911 (NG911) Readiness

Preparing for the emerging capabilities of NG911 (e.g., text, photos, video, telematics, etc.) with a roadmap that adopts and adapts to technology changes, and balances operational needs with improved service and cost effectiveness.

Current State and In-Progress Initiatives

There are several in-progress initiatives, or aspects of the current environment, that serve as a baseline for this Strategic Category:

The State of Washington is in the process of deploying a new Emergency Services IP Network (ESInet), often referred to as ESInet-II. This network is being established in conformance with current National Emergency Number Association (NENA) i3 architectural standards and is planned to evolve with those standards as they undergo periodic upgrades and/or enhancements. When completed, will begin to offer the ability to implement a variety of NG911 Features and Functions to the PSAPs in Washington State if those PSAPs have implemented compatible systems and desire to utilize these Features or Functions.

The King County E911 Program Office (E911 Program Office) currently utilizes a decentralized system architecture, so transitioning the current architecture to an NG911 capable environment would require upgrades and/or enhancements at each of the PSAPs in the county. Currently all the PSAPs use a common vendor (West Safety Systems' VIPER 911 telephone systems). The larger PSAPs

in King County have recently undergone a refresh cycle for this equipment, and this work is now being planned for the smaller PSAPs. Further evaluation of these systems will be needed as the State's ESInet-II is deployed to determine if further enhancements would be needed to meet desired Feature, Function and Security requirements.

The E911 Program Office is engaged in an interim deployment of Text-to-911 technology that should be able to provide this capability to the PSAPs until the full deployment and functionality of ESInet-II is in place.

NG 911 Readiness Objective #1 – Adhere to Standards

The E911 Program Office will only pursue technology investments that are consistent with the NENA i3 framework and compatible with the ESInet-II being deployed by the State of Washington.

(Goal: Meet or Exceed Industry Standards.)

The following **Actions** will be taken:

- A. **NENA i3 Standards** – Monitor the NENA i3 standards process (current version NENA-STA-010.2-2016) to guide decisions on technologies and service providers. NENA i3 is the industry standard defining NG911 capabilities.
- B. **NENA Network & Interoperability Standards** – Monitor NENA Network & Interoperability Standards (03-004; 03-503; 03-506) to achieve compliance and guide future architectural decisions.
- C. **ESInet Standards** – Monitor Washington ESInet standards and guidelines, such as E-911 and NG911 Systems and Network Infrastructure and Security Standards for Washington State Public Safety Answering Points, to guide integration efforts and future decisions

Measurements & Targets: This Objective will require ongoing monitoring of relevant Standards and continuous evaluation of current system characteristics and planned changes to maintain adherence to these Standards.

NG911 Readiness Objective #2 – NG911 Features

The E911 Program Office will partner with the future governing entity to consider and adopt appropriate NG911 features as they become available and as they are needed within the PSAP community. In this context, these features are NG911 capabilities that the PSAPs would use in handling 911 interactions with the calling public.

(Goals: Meet or Exceed Industry Standards; Equity.)

The following **Actions** will be taken:

- A. **NG911 Features** – Pursue NG911 Features that have the greatest customer and operational benefit, including text-to-911; evolved text-to-911; telematics; and “over-the-top” applications.

Text-to-911. The ability for the public to interact with 911 via text messaging is already a King County priority, and an “interim” strategy to accomplish this is coming.¹

¹ The foundations for this strategy can be found in NENA's Interim SMS Text-to-9-1-1 Information and Planning Guide at: http://c.ymcdn.com/sites/www.nena.org/resource/resmgr/Docs/SMS_Text_Info_and_Planning.pdf.

The “interim” strategy is based on using the wireless carrier’s short message service (SMS) text messaging services. No photos or additional material can be attached to these messages. Messages are sent through a carrier-selected Text Control Center (TCC) and then delivered to existing PSAPs either through a virtual private network (VPN) connection to their 911 telephone system equipment, typically referred to as the customer premise equipment (CPE) or through an internet connection to a stand-alone PC-based web browser application.

The State ESInet will be configured to become the pathway between the TCCs and the PSAPs, so once this network is fully deployed and operational at all PSAPs, it would become the replacement for the VPN or browser solutions as long as the PSAP’s CPE is capable of handling text messages in the NENA i3 prescribed manner.

Therefore, from a strategic planning perspective for the King County setting, the Strategies to deal with SMS text-to-911 capability would include:

- Complete the current project to implement the “interim” strategy within the current system architecture of 12 stand-alone PSAPs, with the goal being to migrate the message transport services to the ESInet-II once it is fully operational. During this process include outreach with the deaf community and other special needs communities so they are aware of the solutions being implemented and have an opportunity to provide input on their use and effectiveness.
 - This stage of texting evolution will likely be completed in early 2018.
- Perform necessary upgrades or replacements of the 911 telephone systems at each PSAP to prepare them for handling SMS text-to-911 from the ESInet-II connection.
 - This effort may take some period of time given the current number of individual PSAP CPE systems. It may also be impacted if a decision were made to evolve the King County system architecture towards one or more shared systems. Therefore, the potential timeline for this evolution may extend to 2020 or beyond.
- Migrate SMS-based text-to-911 to the ESInet-II transport, making this a true “NENA i3” end-to-end solution.
 - This effort may take place on a PSAP-by-PSAP basis if the current system architecture is continued, and therefore take place concurrently as the CPE is readied. It may also be deferred until all current systems, or a new shared-system architecture is fully readied. Therefore, it is likely this final transition step may not be completed until 2020 or beyond.

Evolved Text-to-911. There are two evolutionary steps coming in the ability to interact with 911 via text messaging; utilization of Multimedia Messaging Emergency Services (MMES), and utilization of Real Time Text (RTT). These technologies will allow a number of enhanced text-to-911 functions such as the embedding of photos, video or other content along with the text message flows. RTT is perceived as advantageous over SMS-based texting since it allows sender and receiver to see the text of messages appearing as the message is composed. This allows them to gain information in close to real time rather than waiting for the message to be fully composed and sent, thus improving the quality of the bi-directional exchange.

The timelines for these technologies is unclear. The Federal Communications Commission (FCC) recently released a Report & Order (FCC 16-169 Transition from TTY to Real-Time Text

Technology 12/16/2016) which establishes a pathway for wireless carriers to opt to implement RTT technology as a replacement for their current obligation to provide TTY functionality servicing the deaf community over their networks. The major carriers are supportive of the R&O. and the ultimate migration to this technology may take place within the next 2 years.

Therefore, from a strategic planning perspective for the King County setting, the potential Strategies to deal with text-to-911 evolutions might include:

- Monitor and engage in the standards development processes related to the use of MMES and RTT in the 911 domain.
- Monitor the pace at which the carrier and CPE vendor communities begin to embrace these standards
- Work with the PSAPs to develop countywide policies on if, when and how enhanced text messaging will be handled at the PSAPs. This will include establishing decisions about what will and won't be done, how the decided course of action will be funded, and how to coordinate these actions across all PSAPs.
- Engage with the deaf community and other special needs communities to include their perspectives in the development and deployment of enhanced texting capabilities.
- Engage with the State in any ESInet transition planning in preparation for their ability to handle MMES and RTT traffic, including adjustments to ESInet bandwidth to PSAPs that will be handling these enhanced messages. (preliminary timeframe for this is still under development with the State's ESInet vendor)
- Work with the CPE vendor(s) supporting King County PSAPs to make sure they are prepared for these enhanced features at the PSAPs that will be handling these enhanced messages.

The potential timelines for an evolution to enhanced texting capabilities is unknown at this point in time. Once the standards are in place, it will take a period of several years for the carrier and CPE community to fully embrace and implement these standards. Further time would then be needed to roll out the operational policies and procedures on how these enhanced features would be implemented and managed.

For purposes of the King County strategic planning effort, the following evolutionary steps are envisioned:

- The most likely first enhancement would be the ability for photos to be attached to text interactions with 911. The earliest this is envisioned in the King County setting would be after the full migration to ESInet transport and capable CPE, so somewhere beyond 2020.
- This would be followed by expanding this capability to include attaching video clips to text interactions with 911. Conceptually this could materialize as an operational feature in the 2020 to 2021 timeframe.
- The final step would be fully interactive text and enhanced media interactions, where photos and video could be simultaneously transmitted along with text. Conceptually this could materialize as an operational feature in the King County system in the 2021 to 2022 timeframe.

Telematics Services Interfaces. Within the automotive industry, there is a broad array of automatic crash notification and data available that is currently transmitted to private call centers, such as OnStar. Some in the 911 and emergency services field believe this data would be useful to either 911 centers or to responding agencies if it could be transmitted to them before arrival at the scene. The ESI-net provides the most-likely pathway to effectively route and transmit this data between these private call centers and the PSAPs. Further, conveyance of this data to field responders could then be ‘passed through’ the PSAP via either their existing wireless broadband services, or eventually through the FirstNet public safety broadband network.

There is considerable debate in the PSAP community, nationally and locally, on whether the PSAPs should even be involved in receiving and/or doing anything with this data. Some have suggested that the ESI-nets and PSAPs may be used purely as data-pathways for moving this data from the private call centers and responding units. There are also some in the responder community that question the need for this data in the field, particularly in situations where response times are relatively short.

Therefore, from a strategic planning perspective for the King County setting, potential Strategies to deal with telematics services might include:

- Monitor and engage in the standards development processes related to the flow of telematics data to PSAPs and response agencies.
- Work with the PSAPs and response agencies to develop countywide policies on if, when and how telematics data will be utilized in the King County setting.
- Engage with the State in any ESI-net transition planning in preparation for their ability to handle telematics traffic, including adjustments to ESI-net bandwidth to PSAPs that will be handling these enhanced messages. This would include establishing the technology and security policies involving any interfaces to wireless broadband services linking response agencies.
- Work with the CPE vendor(s) supporting King County PSAPs to make sure they are prepared for these enhanced features at the PSAPs if it is decided to utilize these services.
- Work with response agencies to establish the technology and procedural policies to deal with the ESI-net-to-that will be handling these services.

From an overall timeline perspective, work on enabling the transport of telematics data to 911 and first responders is likely to take place in parallel with work on things like text, photos and video. Therefore, the potential timeline for telematics capabilities could mirror these other efforts and perhaps come faster than these efforts. Therefore, for purposes of the King County strategic planning effort, they are being estimated in the 2020 to 2022 timeframe.

Over the Top (OTT) Applications. The wireless device application domain is already populated by a number of “instant messaging” applications to enable communications between users on either wireless devices or traditional PCs. There are also emerging “apps” that attempt to ‘enhance’ the ability to call or interact with 911 by providing a variety of targeted public safety related features such as linking to enhanced data about the caller, providing enhanced information about the caller’s location, etc. These apps run on their own back-end services and ride “over the top” of the carriers’ wireless networks, and therefore outside of the carrier’s

ability to route the traffic to 911 through mechanisms established for text-to-911. While the community pressure to consider implementing these apps may be several years away, it may be that within the 10-year strategic planning horizon the King County plan will need to consider these.

Therefore, from a strategic planning perspective for the King County setting potential Strategies to deal with OTT applications might include:

- Monitor and engage in the standards development processes related to the emergency of these apps and their ability to interact with 911.
- Work with the PSAPs to develop countywide policies on if, when and how these applications will be supported in the King County setting.
- Engage with the State and other Counties to establish policies on if, when and how these applications will be supported statewide.

Given the potential complexity for establishing standards and technologies to allow multiple OTT applications to interact with 911 in a cohesive manner, and the potentially intense policy debate on whether to even allow this capability, it seems likely that this evolution will not take place for several years. For purposes of the King County strategic planning effort, they are being estimated in the 2023 and beyond timeframe.

- B. **Evolution of Standards** – Monitor the evolution of standards development, and their adoption and implementation within the State ESInet-II, to evaluate the maturity, viability and supportability of new features and their applicability to King County’s needs.
- C. **Decision Criteria** – Develop decision criteria to weigh the benefits of new features with their operational and fiscal impacts, and to determine the phasing of deployment.
- D. **Implementation Timeline** – Establish a roadmap and timeline for the implementation of features across the region-wide 911 system in collaboration with the PSAPs and as part of the overall 911 governance model established within this strategic planning process.

Measurements & Targets: This Objective will require ongoing monitoring of relevant Standards and continuous evaluation of current system characteristics and planned changes to maintain adherence to these Standards.

NG911 Readiness Objective #3 – NG911 Functions

The E911 Program Office, in partnership with the PSAPs, will identify a group of NG911 functions, most of which are characteristics of how the ESInet-II will function, that will improve call delivery and capabilities.

(Goals: Meet or Exceed Industry Standards; Equity; Seamless System-wide Technology.)

The following **Actions** will be taken:

- A. **NG911 Functions** – Deploy NG911 functions with the greatest customer and operational benefit. These include ESInet-II; geospatial routing; session initiated protocol (SIP) call transport; call security; routing policies; additional data repository (ADP) functionality; location information; and agency locator support.

Complete Transition of all PSAPs to ESInet-II – Once the new ESInet is fully deployed, tested, and operational, each of the individual PSAPs will need to go through a process of migrating to

the new ESInet. This process will include testing and cutover planning with each individual PSAP, and is expected to be completed by early 2019.

Complete Transition of all Carriers to ESInet-II Connectivity – Once all the PSAPs are fully transitioned to the new ESInet, testing and migration work will continue with the carriers. This will likely not result in many (if any) noticeable impacts at the PSAPs themselves, but will involve extensive testing and coordination with the carriers.

Evolution of Call Routing to Geospatial Routing – The identified end-state for the NENA i3 architecture is for all call routing to be based on the geo-coordinate of each individual call to 911. This requires that mechanisms be in place for the geo-coordinate of each call to be identified **and** an ability to then route the call based on that geo-coordinate. This will require the wireline and VoIP carrier community to move away from the use of the Master Street Address Guide (MSAG) for table-based routing lookups to establishing identified geo-coordinates for each subscriber line termination. It will also require that the ESInet's geographic information system (GIS) data be highly accurate and up-to-date so that appropriate routing can be accomplished.

Until all the statewide GIS data is fully ready for transition to geospatial routing (which may not occur until the end of 2019, the new ESInet will establish and support an Automatic Location Information (ALI) database to support call routing. From a King County strategic planning perspective, this will mean that close coordination between King County and the State will continue to evolve so that the ESInet's GIS data sets have the levels of completeness and accuracy to allow the migration to geospatial routing.

Full conversion to NENA i3 SIP Call Transport – The identified end-state for the NENA i3 architecture is for all traffic entering, transiting and exiting the network to conform to Session Initiated Protocol (SIP) standards established in the NENA i3 model. To achieve this, carriers and PSAPs will need to undergo equipment and protocol transitions to achieve the desired end-state. Within the King County PSAPs, the CPE in use does not currently support the NENA i3 SIP interface, so ESInet-II traffic will be converted to legacy Centralized Automatic Message Accounting (CAMA) trunks for interface to the existing CPE. To complete the transition to full NENA i3 SIP call transport end-to-end, the 911 telephone systems at King County's PSAPs will need to be either upgraded or replaced with NENA i3 compliant systems. This could be accomplished through either of the system architectures discussed later in this report.

Fully developed and deployed security through the full ESInet and CPE/Workstation pathway – Since the NENA i3 architecture is founded on IP networking, routing and security principles, a robust network security model will need to be implemented from the point of ingress into the network from the carriers all the way through to the point of egress to the Call Receiving Workstation. This will require security systems, policies, personnel and processes at the State, County and PSAP levels. From a King County strategic planning perspective, this will be an ongoing process throughout the 10-year planning period.

Implementation of the Policy Routing Function – The NENA i3 architecture will allow IP Routing rules to be established that can provide increased flexibility on how calls get routed to alternate PSAPs if capacity or connectivity isn't available and the Primary PSAP initially targeted for the call. This can allow interagency agreements to be established between PSAPs that would allow them to provide backup or surge capacity for each other and to have these call routing plans already pre-established in the Policies applied in the call routing function. From the perspective

of the ESInet-II itself, this functionality should be available in early 2019. The actual implementation of Policy Routing will depend on each County 911 Program working with their PSAPs (and/or neighboring PSAPs) to establish agreements for any desired routing policies. It is anticipated this work would take place in the 2019 timeframe.

Implementation of Additional Data Repository (ADR) functionality – This database will allow additional information about the caller (such as pre-existing medical information, specific location or routing information, etc.) to be stored within the ESInet so that it can be retrieved by any PSAP receiving a 911 call from that caller. This Repository will also be used for the “LocationbyReference” information needed for delivering pseudo-location information for wireless calls that can then be queried for the actual geo-coordinate information for the caller for mapping display. This functionality may be in place within ESInet-II by 2020, but County 911 Programs and PSAPs may not begin utilizing it for specific caller information until they have put in place policies and practices for what information will be stored and how it will be maintained. They will also need to have their CPE fully compliant with the NENA i3 standards to access this functionality. For King County, this could conceivably take place in the 2020-21 timeframe as NENA i3 compliant systems are deployed across the King County PSAPs.

Implementation of Location information with Calls – Within the NENA i3 architecture, 911 calls from wireline and static VoIP devices will query the Location Information Server (LIS) to determine the location of the caller and pass this “LocationbyValue” information to the PSAP along with the SIP call traffic. This replaces the current Automatic Location Information (ALI) database lookup that the PSAP CPE currently performs in the existing system architecture. For wireless and dynamic VoIP calls, the “LocationbyReference” process will be used to store the actual geo-coordinate location of the calling device (likely in the ADR described above) so it can be queried and utilized by the PSAP CPE once the call arrives. This capability won’t be fully available until all carriers complete their transition to full NENA i3 SIP call delivery, which cannot be accurately predicted at this time.

Agency Locator Support – The NENA i3 architecture identifies a large number of data elements that are logged as a part of the call flow, and the logging service can reside within the ESInet itself or at the PSAP. Each logged element creates an “Agency Locator Record” that includes a Universal Resource Identifier (URI) address to the logging service where the element is stored so that this logged data can be queried by the PSAPs if needed. As with other core ESInet-II functions, this capability will be in place at the completion of the ESInet-II deployment in early 2019. The degree to which the logged data will be utilized by the PSAPs will depend on when they complete their full migration to NENA i3 compatible interfacing to the ESInet, so for King County this would be concurrent with the 2019-20 deployment timeframe.

- B. **Evolution of Standards** – Monitor the evolution of standards development, and their adoption and implementation within the State ESInet-II, to evaluate the maturity, viability and supportability of new functions and their applicability to King County’s needs.
- C. **Implementation Timeline** – Establish a roadmap and timeline for the implementation of functions across the region-wide 911 system in collaboration with the PSAPs and as part of the overall 911 governance model established within this strategic planning process.

Measurements & Targets: This Objective will require ongoing monitoring of relevant Standards and continuous evaluation of current system characteristics and planned changes to maintain adherence to these Standards.

NG911 Readiness Objective #4 – Evaluate and Adopt a System Architecture

The E911 Program Office, working with regional partners and the governance process established from this strategic planning process, will identify an overall system architecture for NG911 capable telephone systems and networking to allow PSAPs to effectively access and utilize the selected NG911 Features and Functions.

(Goals: Meet or Exceed Industry Standards; Seamless System-wide Technology; Secure, Resilient and Survivable.)

The following **Actions** will be followed:

- A. **Identify Options** – Identify system architecture alternatives that have proven successful in other comparable jurisdictions, adhere to the NENA i3 standards, and are judged to be applicable to King County’s needs.
- B. **Review Options against Principles** – Review these options against the Architecture Principles, and identify and compare their individual advantages and disadvantages, so that the strategic planning process can select a system architecture for implementation moving forward.
- C. **Review Options on Financial Criteria** – Coordinate with Finance Taskforce to assess financial/resource impacts of each architectural option.

Measurements & Targets: This strategic planning report from the Technology and Operations Taskforce identifies two system architecture alternatives that meet the established Architectural Principles and Strategic Objectives. Each alternative has a variety of advantages and disadvantages that will need to be evaluated when considering which architecture to implement into the future. The potential milestones for this implementation process is described at the end of the System Architecture Alternatives section of this report.

Integrated and Interoperable Systems

Ensuring systems are integrated effectively to achieve reliable interoperability across organizations and functions in delivering seamless 911 services region-wide.

Current State and In-Progress Initiatives

There are several in-progress initiatives, or aspects of the current environment, that serve as a baseline for this category:

- The State of Washington’s deployment of ESInet-II.
- The capabilities of the current or soon-to-be refreshed PSAP equipment relative to the features and functions becoming available across the ESInet-II.
- Existing operational strategies utilized by the PSAPs with overlapping responsibilities between law enforcement dispatching and Fire/EMS dispatching.
- Existing backup and or interoperability relationships and technology capabilities that may already be established between the PSAPs.

Integrated and Interoperable Objective #1 – Interoperability Features

The E911 Program Office in partnership with PSAPs will identify a group of interoperability features for consideration and adoption during the 10-year Strategic Plan timeframe. These

features may include characteristics such as survivability, geographic and carrier diversity, high availability, and resiliency.

(Goals: Meet or Exceed Industry Standards, Seamless System-wide Technology; Secure, Resilient and Survivable.)

The following **Actions** will be taken:

- A. **Identify Options** – Work with internal and external industry experts to identify and understand:
 - **Carrier Diversity** – Current carrier capabilities and potential for carrier diversity, regardless of the overall architecture selected for King County.
 - **High Availability** – Identifying effective practices to achieve a highly available, resilient and diverse system across all the PSAPs in King County.
 - **Survivability** – Working within existing or future Memorandums of Agreement (MOAs) with other agencies, potentially outside of the region, for developing a continuity of operations plan bolstering survivability from ESInet-II.
 - **Virtual PSAPs** – Exploration of Virtual PSAP capabilities to allow platform-based architectures to be expanded to create PSAP capabilities at locations other than established PSAPs.
 - **Mobile PSAPs** – Exploration of Mobile PSAP capabilities to allow temporary or tactical PSAPs to be established to support unique circumstances
 - **Real-time Data Capture** – Real-time monitoring and baseline data capture (for example to adapt to surges in call volumes)
- B. **Evolution of Standards** – Monitor the evolution of standards development, and their adoption and implementation within the State ESInet-II, to evaluate the maturity, viability and supportability of new features and their applicability to King County's needs.
- C. **Implementation Timeline** – Establish a roadmap and timeline for the implementation of functions across the region-wide 911 system in collaboration with the PSAPs and as part of the overall 911 governance model established within this strategic planning process.

Measurements & Targets: This Objective will require ongoing monitoring of relevant Standards, industry practices and local needs so that local systems can be adapted over time to best meet those needs.

Integrated and Interoperable Objective #2 – Interoperability Functions

The E911 Program Office working in partnership with PSAPs will identify interoperability Functions (mostly characteristics of how the ESInet-II will function) that will improve call delivery and capabilities at the PSAPs.

(Goals: Meet or Exceed Industry Standards; Seamless System-wide Technology; Secure, Resilient and Survivable.)

The following **Actions** will be taken:

- A. Work with internal and external industry experts to identify and understand:

- **Existing Structure** – How PSAPs are currently interconnected (both from a 911 context and across other systems/networks) and highlight processes that work well and need to be sustained or processes that are candidates for improvement.
 - **PSAP Needs** – Needs of each PSAP for interoperability to their respective backup PSAP.
 - **Bottlenecks** – Network bottlenecks, busy signal data, and current roll-over capabilities.
 - **Potential Efficiencies** – Potential for Class of Service or other trunking efficiencies.
 - **Routing Protocols** – Evolving routing protocols within the ESInet.
 - **Data Protocols** – Explore further use of interoperable data protocols (EIDD, XML, etc.) between PSAP systems.
- B. **Evolution of Standards** – Monitor the evolution of standards development, and their adoption and implementation within the State ESInet-II, to evaluate the maturity, viability and supportability of new functions and their applicability to King County's needs.
- D. **Implementation Timeline** – Establish a roadmap and timeline for the implementation of functions across the region-wide 911 system in collaboration with the PSAPs and as part of the overall 911 governance model established within this strategic planning process.

Measurements & Targets: This Objective will require ongoing monitoring of relevant Standards, industry practices and local needs so that local systems can be adapted over time to best meet those needs.

Security and Resiliency

Protecting the 911 call flow, beginning at the State's ESInet, continuing through the various systems and transport mechanisms, and arriving at the PSAPs, while also ensuring the overall resiliency of the E911 systems and operations.

Current State and In-Progress Initiatives

There are several in-progress initiatives, or aspects of the current environment, that serve as a baseline for this Strategic Category:

- Currently, the E911 Program does not have a visible way to track security vulnerabilities, which puts the system at risk. A Security Risk Assessment process is underway during 2017.
- Expectations and awareness regarding the security policies and procedures that should be adhered to are not standardized within the E911 Program Office. This includes the lack of a formalized security awareness and training program and sporadic application of system and network patches and security releases.
- Vendors are not held accountable to regular security audits and contract language needs to be standardized and improved to increase vendor accountability for implementing and adhering to industry, State and E911 Program Office security standards.
- Routine upgrades, patches and version upgrades are currently underway on various networking components, in addition to the previously mentioned VIPER telephone systems refreshes.

Security and Resiliency Objective #1 – Security Standards

The E911 Program Office will identify, understand and apply security standards and practices, including King County Security and Privacy policies, that align across the 911 industry, the ESInet-II, and the requirements of King County and the PSAPs. This strategy maps to the Planning Goals of Meeting or Exceeding Industry Standards and achieving a Secure, Resilient and Survivable 911 environment.

The following **Actions** will be taken:

- A. **Staffing & Funding** – Ensure appropriate level of staffing and funding is in place to continually meet the security objectives of the E911 standards requirements.
- B. **Certification Process** – Establish mechanisms so that personnel working with security issues for the regional E911 phone system can complete an industry approved security certification process. Identify the approved security certificate program by 1Q 2018 and have 25 individuals take the training and earn the certificate in 2018. The training will be available in subsequent years for new hires and those who are yet to take the training, as well as personnel that want to refresh or renew their certificates.
- C. **Security Awareness Training** – Establish an annual security awareness training for appropriate E911 Program Office staff.

Measurements & Targets: All E911 Program and PSAP staff will be required to take security awareness training on a yearly basis to stay current on the security policies and standards that apply to their job functions. The target will be 75% of staff trained in 2018, 85% of staff trained in 2019, and 100% of staff trained in 2020 and beyond.

Security and Resiliency Objective #2 – Security Program

The E911 Program Office will develop an E911 security program that is aligned and integrated with the King County Information Assurance / IT Security Program to ensure that security policies, awareness and practices are understood and integrated into components of the E911 program. This will also ensure data and security roles and responsibilities as described by the NENA security standards are assigned and understood.

(Goals: Meet or Exceed Industry Standards; Secure, Resilient and Survivable.)

The following **Actions** will be taken:

- A. **Security Policies** – Establish E911 security policies and practices with PSAPs that clearly articulate expectations and roles and responsibilities between the E911 Program Office and PSAPs and King County Information Assurance policies, in adherence to KC IT Security Program, established IT security best practices and 911 security standards.
- B. **Staffing & Funding** – Ensure appropriate level of staffing and funding is in place to continually meet the security objectives of the E911 standards requirements.

Measurements & Targets: A security governance structure has been developed and documented. The E911 Program Office and PSAP staff are engaged in the governance structure and in meetings. The target will be to develop the governance structure in 1Q 2018 so that it can be informed by the current E911 Strategic Planning Group and the Governance Taskforce.

Security and Resiliency Objective #3 – Operations and Architecture

Continue to enhance system resiliency. Focus on reliability (ability to handle expected load); redundancy (eliminate single points of failure), and diversity (minimize overreliance on single providers, vendors, or equipment). The system architecture should also optimize the availability of PSAPs to serve as backup(s) to other PSAPs.

(Goals: Meet or Exceed Industry Standards; Secure, Resilient and Survivable; No Request Lost.)

The following **Action** will be taken:

- A. **Implement IT Best Practices** – Implement IT operational best practices to mitigate security risks including the disciplines of asset management, change management, problem diagnostics and management, incident management, patch management / software and hardware upgrades, and lifecycle management

Measurements & Targets: Implement a process at the E911 Program Office to measure and report key performance: availability, blocked calls (not able to be delivered to the PSAP), calls in the queue (ESInet-II), dropped calls, unanswered calls, calls answered, calls dispatched, type of call (landline, cell, VoIP, text). These processes can commence immediately and will be continuously evolving over time.

Security and Resiliency Objective #4 – Vendor Management

Standardize the vendor selection and on-going monitoring processes by developing standard business and technical specifications, service level agreement (SLA) requirements that can easily be measured, and accountability language with appropriate penalties for non-compliance. Require the E911 Program Office to conduct and require security or technical audits on a regular basis as required by NENA and State standards.

(Goals: Meet or Exceed Industry Standards; Secure, Resilient and Survivable; No Request Lost.)

The following **Actions** will be taken:

- A. **Vendor Management Best Practices** – Ensure vendor management best practices are followed to minimize risks of failure from mission critical vendors and service providers.
- B. **Quarterly Reports** – Require quarterly reports from E911 Program Office vendors on performance against the contract SLAs and analyze vendor performance over time to spot emerging adverse trends.

Measurements & Targets: Standard security requirements and language are developed in coordination with KCIT Information Assurance and contracts staff, PSAP staff, and E911 Program Office staff. The target is to include the standard language in new vendor contracts and RFPs developed by the E911 Program Office and/or developed in partnership with PSAPs. These processes can commence immediately as any new procurement or project initiative is launched.

Optimized Operations

Providing reliable 911 services across King County that meet or exceed applicable standards by providing a combination of hardware and software systems, databases, networking and

operational support that accurately locate and route calls to King County PSAPs delivered from the State ESInet-II.

Current State and In-Progress Initiatives

There are several in-progress initiatives, or aspects of the current environment, that serve as a baseline for this Strategic Category:

- The current decentralized system architecture of VIPER telephone systems in each of the PSAPs is undergoing a refreshment process, with the larger PSAPs recently completed and the smaller PSAPs still to be completed.
- Additional projects are underway to enhance current networking to each of the PSAPs for non-911 data connectivity needs (such as retrieving operational statistics from the VIPER systems).
- Ongoing coordination with the State is underway to plan and execute the migration of the PSAPs to ESInet-II once its deployment and testing are complete and other PSAPs around the State with similar VIPER telephone system equipment have undergone successful migrations.
- An interim solution is being implemented to provide Text-to-911 capabilities until full NG911 Features and Functions are enabled through ESInet-II.
- The E911 Program Office is currently undergoing an organizational transition from the Office of Emergency Management to King County Information Technology (KCIT).

Optimized Operations Objective #1 – Standards and Policies

Define and develop standards and policies that clearly define the roles and responsibilities of the E911 Program Office and the PSAPs for the current decentralized system architecture, and adapt these standards and policies as needed if the system architecture undergoes any changes.

(Goals: Meet or Exceed Industry Standards; Secure, Resilient and Survivable; Seamless System-wide Technology.)

The following **Actions** will be taken:

- Demarcation Points** – Define the appropriate demarcations between the E911 Program Office and the PSAPs, and between the E911 Program Office and the State 911 Program, for each individual technology system or operational responsibility so that clear responsibility and accountability paths are established.
- Standards & Policies** – Develop standards and policies that are consistent with over-arching NENA i3 and related standards and tailored to the unique needs of King County and the PSAPs.
- Governance** – Formulate, review and adopt standards and policies through a governance process that result in cost efficiencies or affirm the core mission and goals of the E911 Program.

Measurements & Targets: Achievement of these Strategies will be measured by the successful creation of these standards and policies, and the routine review of E911 Program Office and PSAPs conformance to them. This process has already begun during the strategic planning process and will be an ongoing activity going forward.

Optimized Operations Objective #2 – Delivery Framework

Establish a delivery framework that imposes appropriate governance and controls on both project and change management workloads.

(Goals: Meet or Exceed Industry Standards; Secure, Resilient and Survivable; Seamless System-wide Technology.)

The following **Actions** will be taken:

- A. **KCIT Delivery Framework** – Adapt current KCIT delivery framework strategies to the responsibilities of the E911 Program Office.
- B. **Project Management Standards** – Implement industry standard program and project management techniques, such as those defined by the Project Management Institute (PMI) for their Project Management Professional (PMP) certification or from the Praxis Framework established by the Association for Project Management.

Measurements & Targets: Achievement of these Strategies will be measured by adoption these delivery frameworks, which has already begun during this strategic planning process.

Optimized Operations Objective #3 – Operational Framework

Establish an operational framework based on the Operational IT Infrastructure Library (ITIL) model that clearly defines and governs operational, maintenance, and forward-looking workloads.

(Goals: Meet or Exceed Industry Standards; Secure, Resilient and Survivable; Seamless System-wide Technology.)

The following **Actions** will be taken:

- A. **KCIT Operational Framework** – Adapt current KCIT operational framework strategies to the responsibilities of the E911 Program Office.
- B. **Problem Management** – Implement change control, major incident processes, and problem management disciplines consistent with existing KCIT practice and adapted to E911 Program Office responsibilities.

Measurements & Targets: Achievement of these Strategies will be measured by adoption and use of these frameworks. This work will commence with the formal transition of the E911 Program Office into the KCIT organizational processes and will be a continuous process going forward.

Optimized Operations Objective #4 – Business Continuity Management

Establish a Business Continuity Management (BCM) strategy that delineates between E911 Program Office BCM responsibilities and PSAP BCM responsibilities, and establishes both technical and non-technical response solutions. This strategy maps to the Planning Goals of Meeting or Exceeding Industry Standards and achieving a Secure, Resilient and Survivable 911 environment.

The following **Actions** will be taken:

- A. **KCIT Business Continuity Management** – Adapt current KCIT BCM methodologies to the E911 Program Office.

- B. **KCIT Coordination** – Coordinate overall BCM planning within the context of the Actions already identified related to NG911 Readiness, establishing Integrated and Interoperable systems, and any architectural changes to the overall NG911 environment in King County.

Measurements & Targets: Achievement of these Strategies will be measured by the adoption and use of BCM strategies. This work will commence with the formal transition of the E911 Program Office into the KCIT organizational processes and will be a continuous process going forward.

Optimized Operations Objective #5 – Call Routing and Delivery

Establish a process for determining the appropriate routing of calls to PSAPs that takes into consideration the capacities and capabilities of the PSAPs receiving those calls.

(Goals: Prompt Response; No Request Lost; Seamless System-wide Technology.)

The following **Actions** will be taken:

- A. **Routing Criteria** – Establish mutually agreeable criteria with the PSAPs for determining how routing decisions are made, particularly for the ever-changing world of cell site additions or coverage changes by multiple wireless carriers.
- B. **Periodic Review** – Periodically review and adjust the routing criteria to make sure they remain consistent with PSAP operational needs, capacities and capabilities.

Measurements & Targets: Achievement of these Strategies will be measured by the successful creation and utilization of these call routing strategies. While this objective is already a topic of continuing discussion and work within King County, the establishment of new Policy Routing Functions within ESInet-II will initiate a concentrated process of reviewing these criteria as ESInet-II deployment moves forward.

Accessible and Equitable Service

Increasing equitable access to the 911 services for all communities and individuals served, with specific focus on lessening obstacles faced by groups with unique needs. Please refer to Appendix B, the Full Report from the Accessible and Equitable Service working group established as part of the Technology and Operations Taskforce.

Current State and In-Progress Initiatives

There are several in-progress initiatives, or aspects of the current environment, that serve as a baseline for this Strategic Category:

- The E911 Program Office conducts ongoing public education and outreach related to the proper use of 911. This includes topics such as educating youth, an accidental call campaign, and multicultural campaign.
- The Program Office also develops and distributes a variety of 911 educational material that is used by local public safety agencies in their public education and outreach programs. The Program Office also partners with local public safety agencies in public outreach events.
- The Program Office currently has master contracts in place with three separate language interpretation services. These services are used by the PSAPs to handle 911 calls from non-

English speaking callers. Currently each year approximately 10,000 911 calls in King County require the use of language translation, with over 50 languages being utilized.

- The Program Office provides TTY equipment to the PSAPs for communicating with deaf callers, but many in the deaf community prefer to access 911 by using video relay services of their own selection that they use to place calls to 911.
- King County does not currently have text-to-911 capability in place, and the E911 Program Office is currently engaged in a project to deploy this capability at each of the PSAPs in King County.

Accessible and Equitable Service Objective #1 – Public Education and Outreach

The E911 Program will improve public understanding of the purpose of 911 and how it works.
(Goals: Prompt Response; No Requests Lost; Equity.)

The following **Actions** will be taken:

- Maintain and Increase Educational Outreach** – The King County E911 Program Office will sustain its public education and outreach efforts, in close coordination with the PSAPs and other public safety organizations such as King County Emergency Medical Services Division and local law enforcement and fire agencies.
- Partner with Community Organizations** – Maintain contact with and continue to build rapport with community-based agencies serving low-income, immigrant and refugee, and the deaf, hard of hearing, and deaf/blind communities.
- Partner with Organizations that Innovate with Special Needs Communities** – Seek out innovations that could improve the effectiveness of the E911 system for specific communities such as the deaf, hard of hearing, and deaf/blind communities by organizations such as the Technology Access Program at Gallaudet University and the Public Safety Solutions group at Avaya.
- Share Community Feedback with Other Agencies** – The public does not usually distinguish between the E911 system and the larger emergency response system. Feedback collected during community and educational outreach efforts needs to be shared with relevant agencies so they can also benefit for the information.

Measurements & Targets: Achievement of these Strategies will be measured by establishing a process of periodic reporting by the E911 Program Office on the education, outreach, coordination and innovation activities undertaken each year. This periodic reporting may include combinations of written reports and ‘dashboard’ techniques so that the 911 governance structure and the involved communities can track both year-to-year activities as well as progress over time.

Accessible and Equitable Service Objective #2 – Reducing Barriers

The E911 Program has already implemented successful mechanisms to reduce barriers for people who do not speak English to access the E911 system, and this process should continue to be managed and improved on an ongoing basis. Other barriers still exist or may emerge in the future and the E911 Program Office and the PSAPs should be engaged in an ongoing process to identify and remove barriers when possible.
(Goals: Prompt Response; No Requests Lost; Equity.)

The following **Actions** will be taken:

- A. **Partner with PSAPs to Continue and Enhance Training for Call Takers** – The processes used for interacting with 911 callers that do not communicate verbally or in English need routine examination and refreshing. This will allow the E911 Program Office to collaborate with the PSAPs to identify and deliver training as needed to improve the overall quality of information gathered from the callers and relayed to responding emergency agencies. Evaluation of call taker service and refreshing of training materials should include consultation with communities that experience barriers to accessing 911, such as non-English speakers and deaf/hard of hearing people or organizations.
- B. **Support Access to Phone Services for Low-Income People** – The cost of cell phones and data plans can mean that low-income people do not have easy access to E911. The E911 Program Office should pursue avenues to increase access to cell phones through partnerships with other King County agencies and private and non-profit organizations.

Measurements & Targets: Achievement of these Strategies will be measured first by the E911 Program Office and the PSAPs developing the mechanisms to routinely gather the necessary feedback from these special needs communities. This process will be completed within 1 year of the adoption of this Strategic Plan. Then, in following years, the routine reporting mechanisms established within the governance structure will provide a mechanism for the Program Office to report on annual outreach and training accomplishments.

Accessible and Equitable Service Objective #3 – Modernizing Technology

Modernize technology to eliminate barriers for the deaf community in accessing 911 services. *(Goals: Prompt Response; No Requests Lost; Equity.)*

The following **Actions** will be taken:

- A. **Implement Text-to-911** – The King County E911 Program Office will continue and complete the current text-to-911 project so that all PSAPs in King County have access to this functionality. Then, as ESInet-II deployment is completed and King County implements one of the alternative architectures with full NENA i3 NG911 capabilities, continue to enhance text and related capabilities as these features become practical to implement. Organizations serving the deaf and hard of hearing community should be involved in implementing the transition to text-to-911, as well as outreach to organizations that innovate for these communities as described above.
- B. **Seek Ongoing Feedback about how E911 Technologies are Meeting Community Needs** – As NG911 technology progresses and community needs change, the E911 Program Office should implement a process for routinely gathering feedback on how these technologies are meeting the needs of communities.

Measurements & Targets: Achievement of these Strategies will be measured in three ways. First, text-to-911 services need to be implemented, and this is planned to be complete by Q1 2018. Second, within the first year of this Strategic Plan, the E911 Program Office will establish a routine process for engaging with the deaf, hard-of-hearing, and deaf/blind community to seek feedback on how this technology is meeting their needs. Third, the E911 Program Office will establish a mechanism to routinely reach out to these communities and organizations that

innovate for these communities as strategies are being developed for enhanced text-to-911 or similar accessibility strategies.

System Architecture Alternatives Review and Assessment

Insights From Other Jurisdictions

The Technology and Operations Taskforce has examined a wide variety of potential 9-1-1 system architectures that have been successfully applied to situations similar to King County's by other jurisdictions around the country. The Taskforce conducted telephone interviews with each of these organizations and collected a variety of other information on the characteristics of each jurisdiction, and then reviewed this formation over a series of several Taskforce meetings to gain a broad understanding of the architecture alternatives that could be applicable to King County's needs. The following summaries provide an overview of the insights collected by the Taskforce.

Palm Beach County, FL has a total population of just over 1.4 million in an area of almost 1,970 square miles. There are 18 PSAPs across the county, and two different 9-1-1 systems are used to meet their 9-1-1 needs. Sixteen of the PSAPs are supported by a dual-core platform architecture system with geo-diverse cores in data center environments. The two remaining PSAPs have 9-1-1 system cores located at each of their facilities and each of these systems provides backup for the other (so in essence a dual core, geo-diverse system like the one serving the other 16 PSAPs). 9-1-1 call routing services are accomplished on a carrier-provided ESInet. Palm Beach County reported that they have been well served by both of these configurations and feel they are well position for continuing evolution of NG911 capabilities.

Maricopa County, AZ has a total population almost 4.2 million in an area of approximately 9,200 square miles. There are 26 PSAPs across the county and a multi-year project is underway to migrate all of these PSAPs from their current stand-alone distributed architecture to a combination of three dual-core, geo-diverse platform architecture systems. Three systems are being utilized to distribute the overall load across multiple systems and to group PSAPs that routinely interact with one another on the same platform for enhanced interoperability. Initial 9-1-1 call routing services will be accomplished with the legacy carrier-provided selective routing systems, and migration to full ESInet capabilities will take place at some time in the future.

Denton County, TX has a total population of approximately 790,000 and the 9-1-1 program serves an area slightly larger than the county and a total of 11 PSAPs. All of these PSAPs are serviced on a single dual-core geo-diverse platform system with the cores located in data center environments. 9-1-1 call routing services are accomplished with the legacy carrier-provided selective routing systems but the platform system are ready for full ESInet call transport migration when it is deployed. This system has been in place for several years and it replaced a platform-architecture shared system that had been in place for several years before that. The county reports that the platform architecture has met their needs very well over the years.

Tarrant County, TX has a total population of approximately 2 million in an area of 864 square miles. There are 48 PSAPs across the county and two separate dual-core geo-diverse platform systems are used for their 9-1-1 services with the cores located in data center environments. Two separate systems were utilized to distribute the overall load across multiple systems and avoid the potential for all PSAPs being impacted by some problem on a single system. 9-1-1 call routing services are accomplished with legacy carrier-provided selective routing systems but the platform systems are ready for full ESInet call transport migration when it is deployed. Tarrant county is in the early stages of deploying these new systems but they report that everything is going well.

Fairfax County, VA has a total population of approximately 1.2 million in an area of 391 square miles. Virtually all 9-1-1 and dispatching services are aggregated in a single organization, with three smaller secondary PSAPs. All of the PSAPs operate on a single dual-core geo-diverse platform system with the cores located at the Primary and Backup PSAPs for the main dispatch organization. The secondary PSAPs are then networked to this platform. The county reports that this architecture has worked well for them

Thurston and Clark Counties, WA have partnered together to implement a dual-core geo-diverse system with the cores located at each of their respective countywide PSAPs. They have also established remote networking to the PSAP at Wahkiakum County so that county's 9-1-1 services don't require a stand-alone system at Wahkiakum's PSAP.

The Taskforce has steadily refined their understandings of each of these architecture alternatives and their suitability for local needs, and has ultimately identified two system architecture alternatives that could be considered for King County's long term strategic direction. Each of these alternatives would meet the Vision, Values and Goals established for the strategic planning process, and also meet the Objectives and Architecture Principles established for the Taskforce.

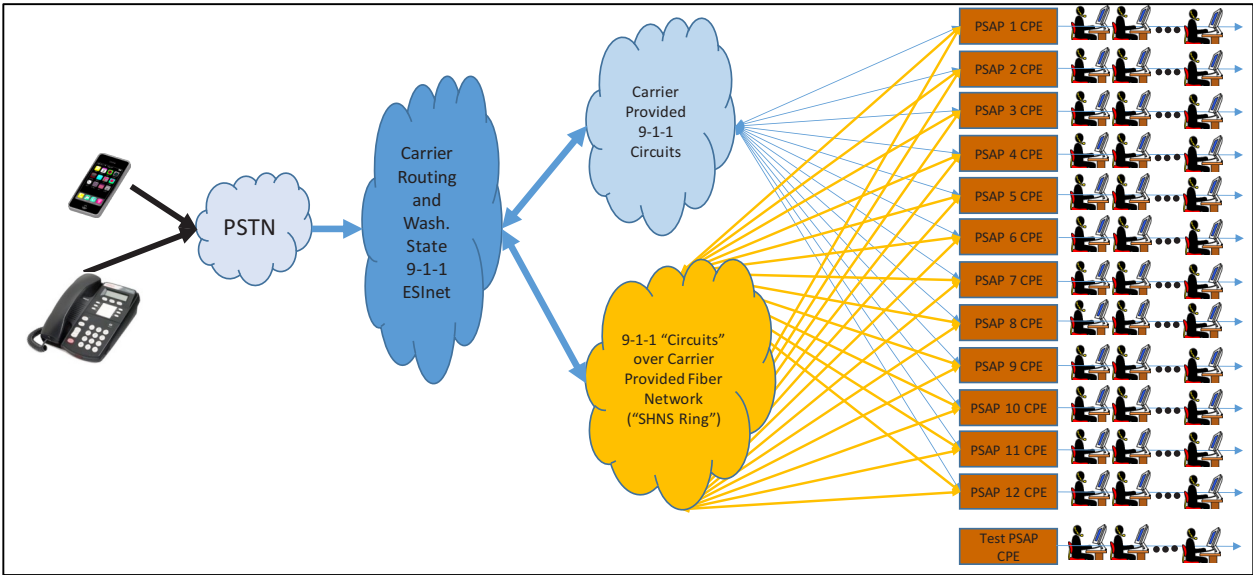
ESInet-II and System Architecture Considerations

In considering potential system architectures for King County PSAPs, the Taskforce developed an in-depth understanding of the implications of the deployment of the new ESInet-II by the State of Washington E911 Program. As discussed elsewhere in this report, this new NG911 network will provide significant enhancements in how calls are routed and transported for all PSAPs in Washington State, and provide the foundation for the migration to NG911 systems at King County's PSAPs.

The Taskforce established a series of three diagrams that help explain the migration from how calls are currently routed and transported in the current ESInet environment, and how this will change with the deployment of ESInet-II. The current call transport configuration is shown in Figure 1 below. 9-1-1 calls are currently routed to King County PSAPs over two separate networking strategies. The majority of the call traffic is routed over a digital Self-Healing Network Service (SHNS) provided by CenturyLink while a smaller volume of the traffic is routed over traditional copper circuits, referred to as CAMA² circuits. At each PSAP, the calls delivered over the SHNS network are converted to CAMA interfaces, and then all of the CAMA circuits are interfaced to the 9-1-1 telephone system at the PSAP.

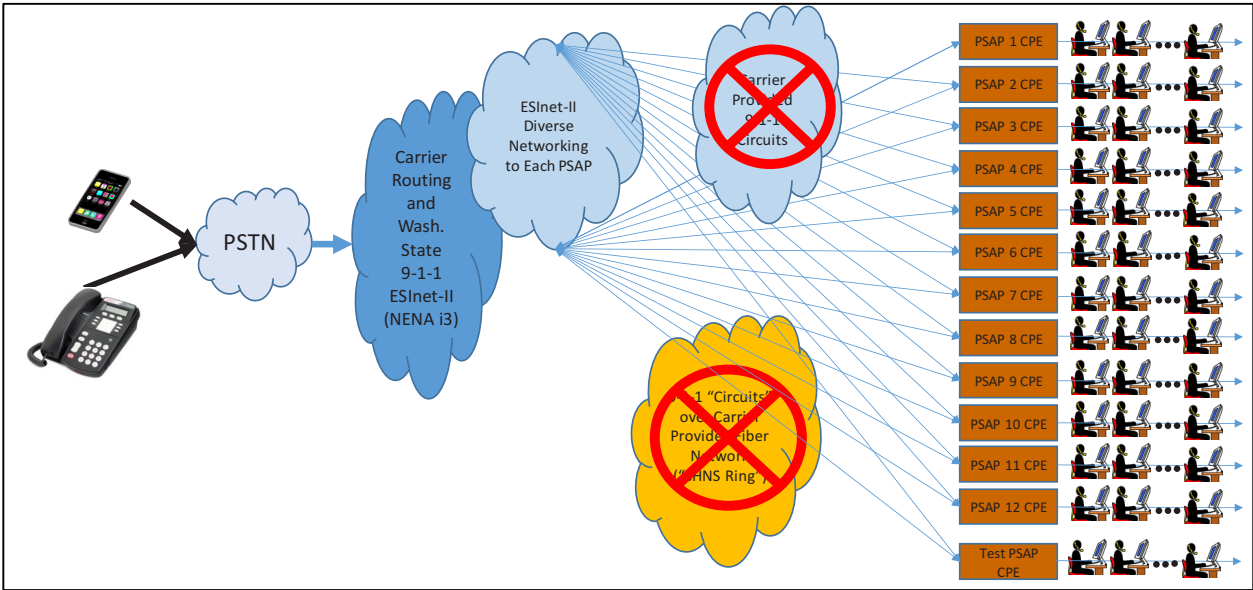
² Centralized Automatic Message Accounting (CAMA) trunks are the legacy analog technology used to convey calls from the Public Switched Telephone Network (PSTN) to the 9-1-1 PSAPs.

Figure 1 - Current Call Routing and Transport for King County PSAPs

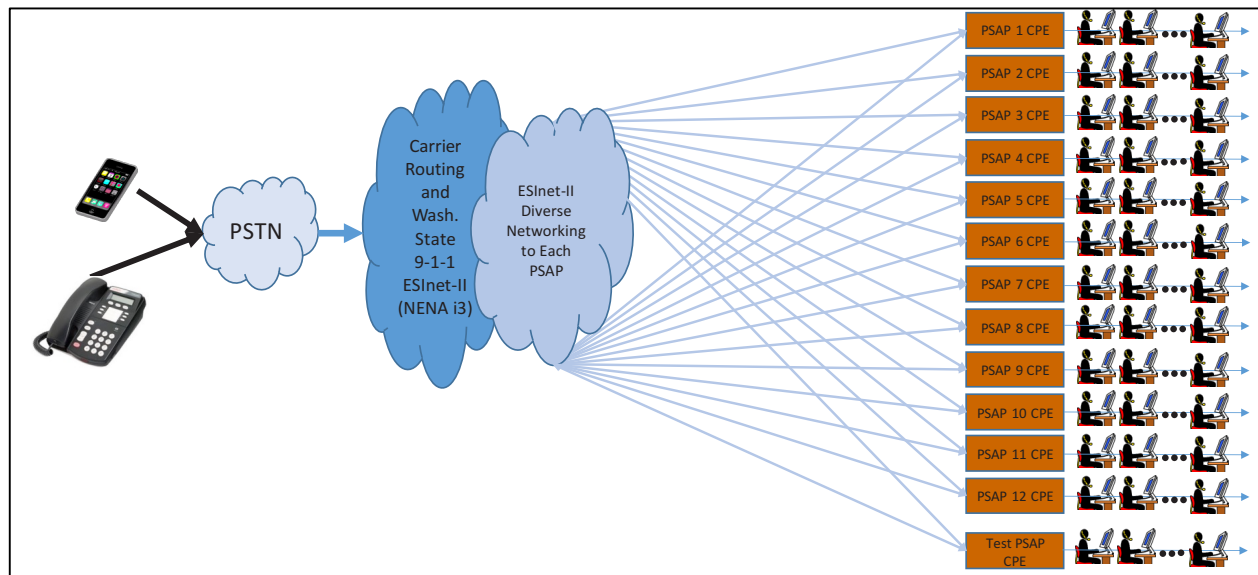


With the deployment of ESInet-II, the transport of all calls to PSAPs will be migrated to a single digital network that will be operated by the State of Washington’s E911 Program Office and their vendor ComTech. This NENA i3 compliant network will have redundant and diverse-path links to each of the PSAPs in King County and fully replace the legacy CAMA circuits and eliminate the need for the SHNS digital fiber service. This transitional process is shown in Figure 2 below.

Figure 2 - New ESInet-II Replaces the Current CAMA and SHNS Networking



At the conclusion of the ESInet-II migration, 9-1-1 calls will be routed to King County PSAPs solely over the redundant ESInet-II connections, as shown in Figure 3 below.

Figure 3 - ESInet-II Networking at Completion of Migration - **King County PSAPs Still on Existing 911 Systems**

It is extremely important to note that the completion of the ESInet-II migration does not mean that King County PSAPs will have full NENA i3 NG911 capabilities. The 911 systems currently in place at King County PSAPs do not fully meet the NENA i3 NG911 standards, and therefore will not connect to the ESInet-II directly. Rather, just like is being done today, the digital ESInet-II calls will be converted to CAMA circuits at the PSAPs and these CAMA circuits will then be interfaced to the 911 system. Therefore, to complete a migration to full NG911 capabilities, King County will need to either upgrade or replace the current systems with systems that fully comply with the NENA i3 and ESInet-II standards.

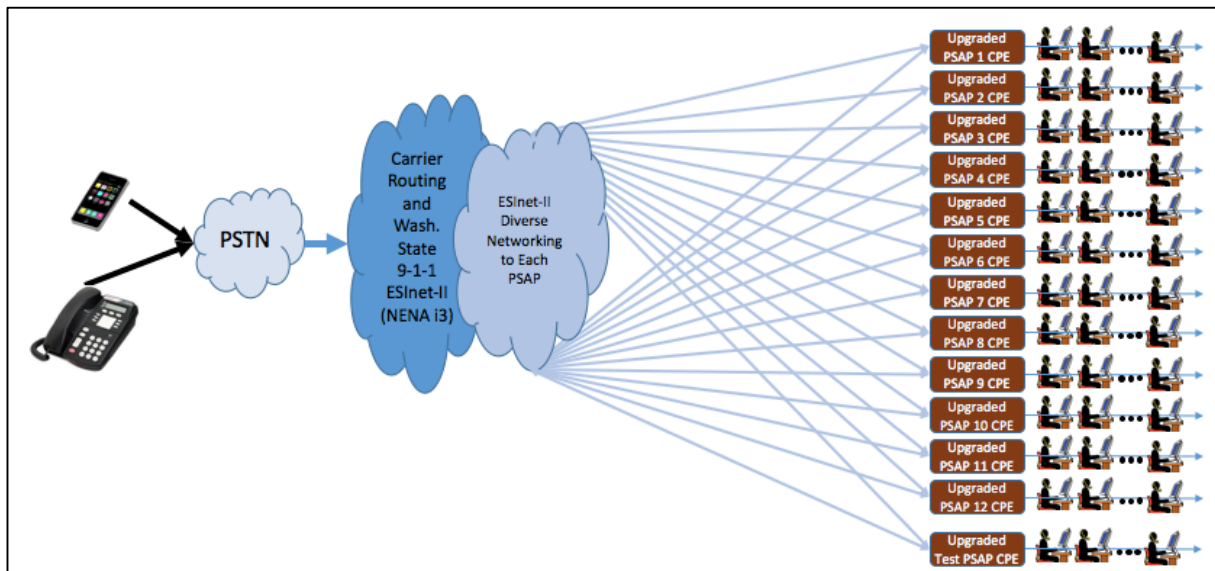
The Technology and Operations Taskforce has identified two alternative system architectures to meet this need to achieve full NG911 capabilities for King County's PSAPs.

Architecture Alternatives That Can Meeting King County's Needs

Distributed System Architecture

The first of these architectures has been identified as a Distributed System Architecture. This is the approach currently utilized in King County, with each PSAP being equipped with a 9-1-1 telephone system that is interfaced to the State of Washington's 9-1-1 backbone system. With the State's system undergoing a migration to a standards-based NENA i3 compliant architecture (being referred to as ESInet-II), King County would similarly need to migrate the PSAPs to NENA i3 compliant 9-1-1 telephone systems so that the full range of NG911 capabilities established within the ESInet-II could be utilized within King County. This architecture is shown in Figure 4 below:

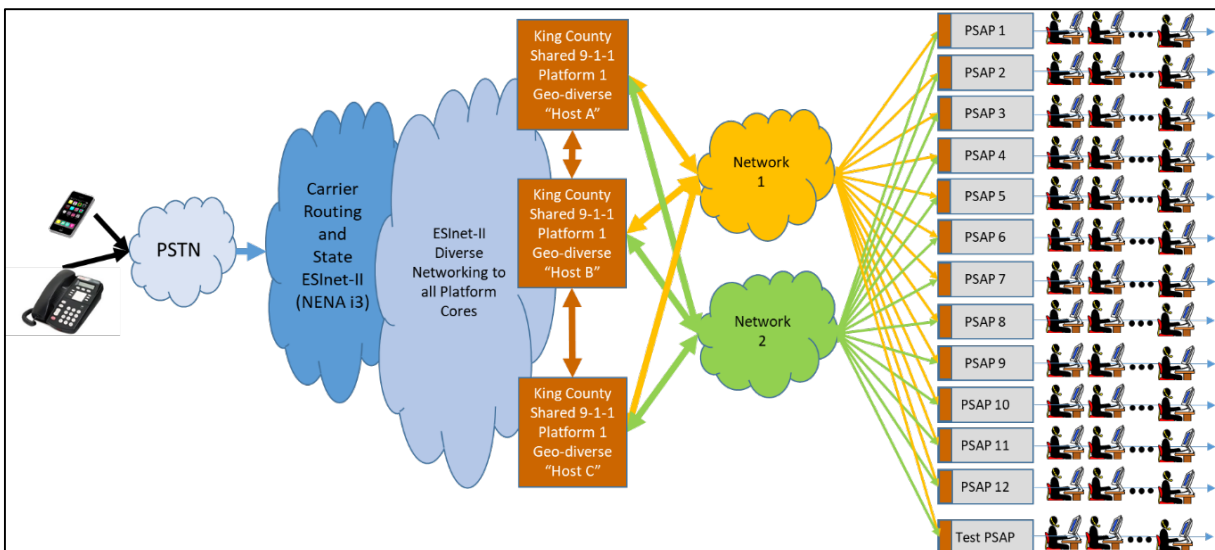
Figure 4 - Distributed System Architecture with All PSAP Systems NENA i3 and ESInet-II Compliant



Single Platform Architecture

The second of these architectures has been identified as a Single Platform Architecture. In this approach, the core elements of the 9-1-1 telephone system infrastructure are moved to a multi-node host platform. The State's ESInet-II delivers calls to this shared system platform, and the PSAPs are then networked to the platform. The platform approach also allows one of the host nodes to be located in a geographically remote location to increase system resiliency compared to having hosts only located within King County. This architecture is shown in Figure 5 below:

Figure 5 - Single Platform Architecture with All PSAP Systems NENA i3 and ESInet-II Compliant



Evaluating the Architectures Against the Principles

One layer of assessment was to take the two architectural alternatives and evaluate them for their conformance to the adopted Principles. In Table 1 below, the Taskforce compiled their evaluative observations for each architecture.

Table 1 - Alignment to Principles

Principle	Distributed Architecture	Single Platform Architecture
Public Safety	<ul style="list-style-type: none"> Meets this principle 	<ul style="list-style-type: none"> Meets this principle
Security	<ul style="list-style-type: none"> Security measures need management at each of the systems at each PSAP Version differences may create different security vulnerabilities Lower risk of a single security vulnerability impacting multiple PSAPs simultaneously since each is independent from the other 	<ul style="list-style-type: none"> System security administered at the platform level is easier to accomplish for the system as a whole, compared to stand-alone PSAP-based systems Limited physical access to platform cores provides an additional security measure Security at each PSAP still critical to protect PSAPs from each other within the shared platform network Even though interfaces still need to external systems like CAD systems, uniform interface security techniques could be applied Increased risk of a single system configuration error or security vulnerability impacting multiple PSAPs Utilizing redundant networks creates additional complexity in overall security management
Fair & Equitable	<ul style="list-style-type: none"> Accessibility features/functions need to be coordinated and implemented at each individual PSAP, increasing the complexity of planning and rolling out new capabilities Technology differences at each PSAP may create obstacles to uniform distribution of enhanced features Regional policies and coordination still needed to decide which accessibility features to implement, and when/how they would be implemented at the PSAP level 	<ul style="list-style-type: none"> Any accessibility feature or function implemented within the system is then available to all PSAPs consistently Regional policies and coordination still needed to decide which accessibility features to implement, and when/how they would be implemented at the PSAP level
Cost Effectiveness	<ul style="list-style-type: none"> CAPEX and OPEX replicated at each PSAP Rolling out features and functions requires considerable personnel resources and coordination to perform this work at each individual PSAP Even if a single vendor utilized, administering that vendor's services across 13 individual systems would be more complex than with the platform approach 	<ul style="list-style-type: none"> Reduces the level of CAPEX and OPEX in the core 9-1-1 telephone system equipment but may increase networking costs Cost effectiveness needs to be measured across a multi-year migration cycle so that economic value of current systems is realized Vendor services management easier to administer with fewer cores than with distributed approach

Principle	Distributed Architecture	Single Platform Architecture
	<ul style="list-style-type: none"> State pays for ESInet-II networking all the way to the PSAPs 	<ul style="list-style-type: none"> State only pays for ESInet-II networking to the platform cores and networking from the cores to the PSAPs becomes a local responsibility
Capacity	<ul style="list-style-type: none"> Capacity management is largely at a PSAP level, but challenging to establish regional strategies for capacity management with each PSAP its own stand-alone system ESInet-II Policy Routing Function will create some increased flexibility to manage capacity regionally Broadening call routing configurations may create call processing challenges since each PSAP operates their own CAD system 	<ul style="list-style-type: none"> All PSAPs on a single platform could increase the regional flexibility to react to call volume surges and capacity challenges impacting multiple PSAPs Capacity across redundant networks needs to be planned to accommodate traffic surges as well as network failures Opportunities may exist to leverage combinations of carrier and local governmental networks for the networking between the platform cores and the PSAPs
Availability	<ul style="list-style-type: none"> From a regional perspective, high availability due to distributed architecture supported by diverse-path ESInet-II networking System malfunctions at a single PSAP unlikely to cause malfunctions at any other PSAPs 	<ul style="list-style-type: none"> Geo-diverse cores reduce single-point failure risks Geo-diversity of cores expanded outside of King County reduces risks from a large-scale seismic event Platform-level failures or configuration errors could adversely impact multiple (or all) PSAPs Redundancy and diversity of networking (at the physical and technological levels) is needed to assure connectivity to PSAPs
Interoperability	<ul style="list-style-type: none"> Compatibility and compliance with ESInet-II interface requirements need to be met at each PSAP Ability to transfer or manage 9-1-1 calls between PSAPs is limited to “9-1-1 transfers” through ESInet-II 	<ul style="list-style-type: none"> Compatibility and compliance with ESInet-II interface requirements need only be done at the platform level. Being on a shared platform makes it easier to establish a variety of call transfer or other call management characteristics that could increase interoperability and flexibility between the PSAPs beyond what is capable through ESInet call transfers. This flexibility could also apply to 10-digit and ring-down lines creating more flexibility in how PSAPs plan and execute backup relationships Interop with the ESInet-II and out-of-county PSAPs would only need to be configured and administered at the platform level Redundant networking may create interop opportunities for other systems
Convergence	<ul style="list-style-type: none"> Continuing the practice of using a common PSAP equipment vendor for all PSAPs creates a level of convergence from an operational capability perspective 	<ul style="list-style-type: none"> This would be the most ‘converged’ of all the alternatives, with all PSAPs on a single shared system Operating on a shared system can create situations where a system patch, upgrade

Principle	Distributed Architecture	Single Platform Architecture
		<p>or enhancement creates changes in how various features, functions or interfaces work, requiring careful coordination with all PSAPs as upgrades are being planned and implemented</p> <ul style="list-style-type: none"> Redundant networking may create other convergence opportunities

With these evaluative observations mutually agreed to by the Taskforce members, the group then went through a process of evaluating the two alternatives against each other in the degree to which the Principles would be met if this alternative were implemented. The results of that process are shown in Table 2 below. In this table, if an architecture is judged to meet the Principle a \checkmark mark is shown. If the architecture is judged to have exceeded the Principle or meets the Principle in some manner that is better than the other alternative a $\checkmark +$ mark is shown.

Table 2 - Comparison of the Alternatives for Each Principle

Principle	Alt 1 – Distributed Architecture	Alt 2 – Single Platform
Public Safety	$\checkmark +$	$\checkmark +$
Security	\checkmark	$\checkmark +$
Fair and Equitable	\checkmark	$\checkmark +$
Cost Effective		
Capacity	\checkmark	$\checkmark +$
Availability	$\checkmark +$	$\checkmark +$
Interoperability	\checkmark	$\checkmark +$
Convergence	\checkmark	$\checkmark +$

Advantages and Disadvantages of Each Alternative

The Taskforce also went through a process of characterizing the Advantages and Disadvantages of each of the architectural alternatives. These characterizations are provided in Tables 3 and 4 below:

Distributed Architecture

- E911 telephone equipment (PSAP CPE) resides at each PSAP serving that PSAP. King County E911 Program responsible for PSAP CPEs.
- ESInet-II, Washington State's NG-911 network, delivers calls to PSAP CPEs using diverse paths to each PSAP. State covers networking costs and accountable for call delivery.
- Requires investment to upgrade or replacement PSAP CPEs to meet ESInet-II and NENA i3 (NG911 technical standard) requirements.

Table 3 - Distributed Architecture - Advantages and Disadvantages

Advantages or Beneficial Characteristics	Disadvantages or Adverse Characteristics
<ul style="list-style-type: none"> • Self-sufficient PSAPs – Each PSAP has a stand-alone E911 telephone system that is directly linked to the ESInet, so a failure at any individual PSAP remains isolated to that PSAP and has limited or no impact on overall countywide 9-1-1 availability at the other PSAPs • PSAP Flexibility – Each PSAP can be specifically configured as needed to interface to the PSAPs administrative phone system. Each PSAP customizes phone and operations per business needs of that PSAP. Control of changes driven by PSAPs needs. • Network Simplicity – The State would manage diverse networking to each of the PSAPs, allowing King County resources to be focused on the PSAP telephone and supporting systems (mapping, NG911 capabilities, etc.) State is accountable for 911 call delivery to PSAPs. • Known – Current practice of having full E911 phone systems at each PSAP and current roles and responsibilities between PSAPs and E911 Program would be continued. 	<ul style="list-style-type: none"> • Increased Security Complexity – Managing version, patch and security updates is complex and requires considerable staff-time when spread across multiple PSAPs. • Limited Interoperability – Interoperability – the ability to connect systems, exchange data and connect operations - between PSAPs limited to 911 call transfers back through the ESInet to other PSAPs. • More Complex Migration to NG911 – Implementation of NG911 capabilities needs to be accomplished on a PSAP-by-PSAP basis. • Routine Maintenance Challenges – Multiple phone systems at various stages of their lifecycles creating challenges with interfaces, security and routine upgrades. • Duplicated System Costs – Each PSAP requires investment in E911 phone system equipment that isn't proportional to the number of positions operating at that PSAP.

Advantages or Beneficial Characteristics	Disadvantages or Adverse Characteristics
<ul style="list-style-type: none"> • Networking Cost Savings – The State covers the cost of ESInet-II networking all the way to each PSAP. • Call Routing & Backup – ESInet-II will create enhanced call routing flexibility between PSAPs to help manage capacity constraints or deal with failover conditions. 	

Single Platform Architecture

- E911 telephone equipment (PSAP CPEs) move from PSAPs and centralized into three (at minimum) geographically diverse platform cores, with one core potentially outside of Western Washington. Network switch remains at PSAPs to interface with cores, and King County responsible for platform cores and switches.
- State's ESInet-II network delivers calls to the cores, and King County responsible for network to deliver calls to PSAPs.
- Requires investment to implement platform cores, network switches at PSAPs and network connectivity from E911 platform cores to PSAPs.

Table 4 – Single Platform - Advantages and Disadvantages

Advantages or Beneficial Characteristics	Disadvantages or Adverse Characteristics
<ul style="list-style-type: none"> • Potentially Lower Equipment Costs – May provide opportunities to lower overall one-time and on-going costs for the platform core equipment by reducing number of E911 phone systems overall. • Increased Resiliency – If core diversity can include locating equipment outside the Puget Sound area (like Eastern Washington) there is a lower potential for a single seismic event to render the system inoperable. • Ease of System Management – Easiest to manage and roll-out new capabilities, and once rolled out they are available to all PSAPs. Also, logistically easier to manage vendor performance, upgrades, patching and system monitoring. • Increased Security – Easier to monitor system security and physical access with 	<ul style="list-style-type: none"> • Higher Network Costs – Equipment cost savings likely to be offset by increases in costs for highly reliable networking connectivity from platform cores to PSAPs. • Higher Impacts from Platform Failures – While risk is minimal because of redundant and geographically diverse cores, a major hardware or software failure or configuration management error may impact multiple (or all) PSAPs. • Maintenance and Troubleshooting Challenges – With one of the cores located remote from King County, this increases the complexity of performing routine maintenance/upgrades or responding to major system issues if physical presence required.

Advantages or Beneficial Characteristics	Disadvantages or Adverse Characteristics
<p>fewer nodes and security resources can focus efforts to keep core systems protected.</p> <ul style="list-style-type: none"> • Capacity Management– Increased flexibility to manage call volume surges and/or backup strategies between PSAPs within a shared system. • Consistency Across PSAPs – Any accessibility or NG911 capability is made available consistently and evenly to all PSAPs. Changes at the core can affect all PSAPs simultaneously. • Future Flexibility – New capabilities available, such as ability to create virtual or mobile PSAPs off the shared cores, new communications modes such as instant messaging or text, etc. Can also create more flexibility in how 10-digit or ring-down lines are managed within the system, which could be advantageous to PSAPs in planning and executing backup relationships. 	<p>Troubleshooting call delivery issues will also involve State and King County.</p> <ul style="list-style-type: none"> • Governance – With PSAPs on a shared system, high levels of governance and change management process will be needed so that system changes are well understood at all the PSAPs and any operational impacts can be well considered in advance of any system changes.

As a final step, the Taskforce considered all the Advantages and Disadvantages of each of the alternatives and identified the three most important items for each alternative. These results are shown in Table 5 below:

Table 5 - Top 3 Advantages and Disadvantages for Each Architecture Alternative

Distributed	Single Platform
<u>Advantages</u> <ul style="list-style-type: none"> • PSAP Flexibility • Self-Sufficient PSAPs • Network Cost Savings 	<u>Advantages</u> <ul style="list-style-type: none"> • Increased Security • Ease of System Management • Increased Resiliency
<u>Disadvantages</u> <ul style="list-style-type: none"> • Increased Security Complexity • Routine Maintenance Challenges • Duplicated System Costs 	<u>Disadvantages</u> <ul style="list-style-type: none"> • Higher Network Costs • Higher Impacts from Platform Failure • Maintenance and Troubleshooting Challenges

Potential Timelines

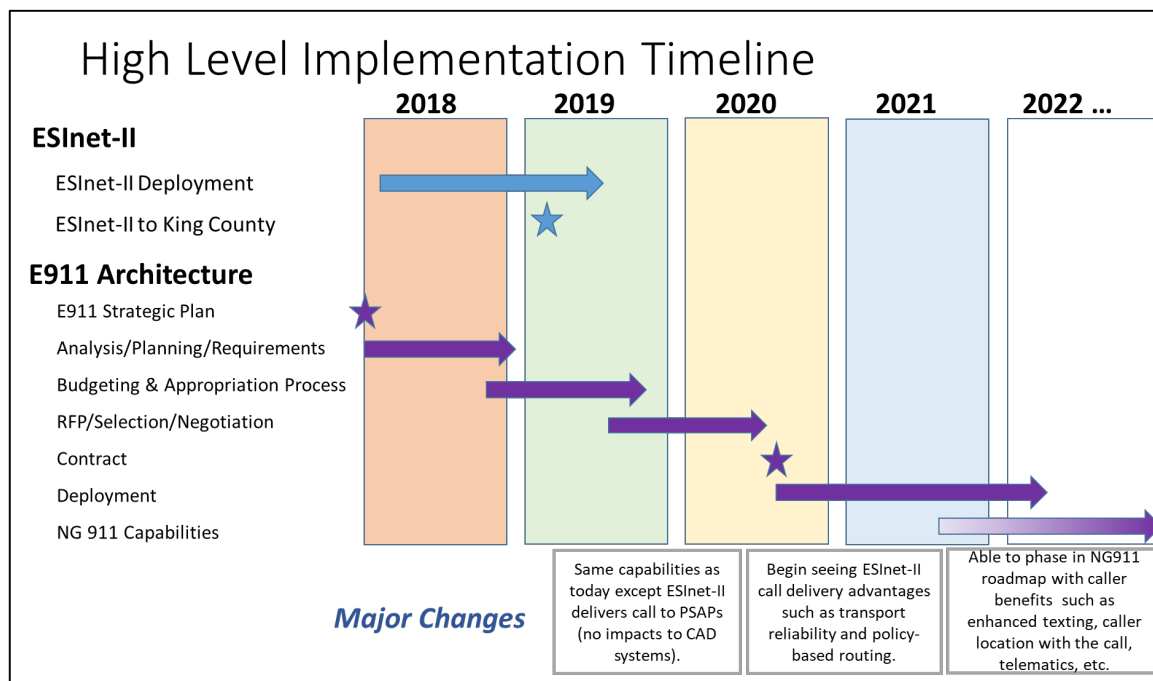
It is important to remember that as the State completes the deployment and cutover to ESInet-II call routing and transport to the PSAPs, this does not mean that Alternative 1 – Distributed Architecture has been implemented. As ESInet-II transition completes in late 2018 or early 2019, the NENA i3 call delivery mechanism will be used to bring the 9-1-1 call to the PSAP and then a conversion will be made to CAMA interfaces to the existing CPE (just like it is today for the calls arriving over the IP SHNS service).

King County would still need to make a conscious choice on how it wanted to reach full NENA i3 NG911 capability, by either upgrading or replacing the current systems at each of the PSAPs (the Distributed Architecture alternative) or by migrating to the Single Platform alternative. Either of these paths would involve its own implementation timeline including RFI/RFP processes followed by contract negotiations, detailed design, installation, testing, training and cutover processes.

Regardless of the architecture selected, the role of the E911 Program Office would likely stay the same as it is today, or even expand as Program Office resources, or PSAP personnel paid for out of E911 revenues, take on larger roles in Tier 1 and Tier 2 support of the NG911 systems, features and functions.

A high-level implementation timeline is provided in Figure 6 below.

Figure 6 - High Level Implementation Timeline



Cost Estimates for the Architecture Alternatives

In an effort to understand the potential costs for acquiring and implementing either of these architectural alternatives, the Taskforce conducted a round of outreach with the community of vendors to offer these types of systems. The goal of this work was to determine the potential range of both capital acquisition expenses (CAPEX) and ongoing operational expenses (OPEX) for each of the alternative architectures. Information was also gathered on the nature of the networking and bandwidth requirements needed for the Platform Architecture so that networking cost estimates could also be developed. A total of four system vendors provided information for this process.

From a CAPEX perspective, the Platform Architecture would be slightly less expensive, with total costs between 7% and 10% lower compared to the Distributed Architecture, or an overall CAPEX savings of between \$545,000 and \$843,000. Tables 6 and 7 below show the lowest and highest cost estimates provided, and the mean and median values across the estimates provided.

Table 6 - Distributed Architecture Estimated CAPEX

Distributed Architecture CAPEX Cost Estimates (with tax)					
		Lowest Cost Estimate	Highest Cost Estimate	Mean of Cost Estimates	Median of Cost Estimates
PSAP 1	Enumclaw Police Department	\$ 96,010	\$ 147,424	\$ 127,366	\$ 138,665
PSAP 2	UW Police Department	\$ 72,008	\$ 110,568	\$ 95,525	\$ 103,999
PSAP 3	Issaquah Police Department	\$ 96,010	\$ 147,424	\$ 127,366	\$ 138,665
PSAP 4	Bothell Police Department	\$ 144,016	\$ 221,136	\$ 191,049	\$ 207,997
PSAP 5	Port of Seattle Police Department	\$ 192,021	\$ 294,847	\$ 254,733	\$ 277,329
PSAP 6	Redmond Police Department	\$ 456,050	\$ 700,263	\$ 604,990	\$ 658,657
PSAP 7	Washington State Patrol - Bellevue	\$ 240,026	\$ 368,559	\$ 318,416	\$ 346,662
PSAP 8	NORCOM	\$ 552,060	\$ 847,686	\$ 732,356	\$ 797,322
PSAP 9	Seattle Fire Department	\$ 672,073	\$ 1,031,966	\$ 891,564	\$ 970,653
PSAP 10	King County Sheriff's Office	\$ 744,081	\$ 1,142,534	\$ 987,089	\$ 1,074,651
PSAP 11	Valley Com	\$ 1,224,133	\$ 1,879,653	\$ 1,623,920	\$ 1,767,975
PSAP 12	Seattle Police Department	\$ 1,056,115	\$ 1,621,661	\$ 1,401,029	\$ 1,525,312
PSAP 13	Test PSAP	\$ 120,013	\$ 184,280	\$ 159,208	\$ 173,331
Totals		\$ 5,664,618	\$ 8,698,000	\$ 7,514,611	\$ 8,181,217
	Per Workstation Average Overall Cost			\$ 31,842	\$ 34,666

Table 7 - Platform Architecture Estimated CAPEX

Single Platform Architecture CAPEX Cost Estimates (with tax)					
		Lowest Cost Estimate	Highest Cost Estimate	Mean of Cost Estimates	Median of Cost Estimates
PSAP 1	Enumclaw Police Department	\$ 89,108	\$ 140,898	\$ 118,126	\$ 124,372
PSAP 2	UW Police Department	\$ 66,831	\$ 105,674	\$ 88,595	\$ 93,279
PSAP 3	Issaquah Police Department	\$ 89,108	\$ 140,898	\$ 118,126	\$ 124,372
PSAP 4	Bothell Police Department	\$ 133,662	\$ 211,347	\$ 177,189	\$ 186,558
PSAP 5	Port of Seattle Police Department	\$ 178,217	\$ 281,797	\$ 236,252	\$ 248,743
PSAP 6	Redmond Police Department	\$ 423,264	\$ 669,267	\$ 561,099	\$ 590,766
PSAP 7	Washington State Patrol - Bellevue	\$ 222,771	\$ 352,246	\$ 295,315	\$ 310,929
PSAP 8	NORCOM	\$ 512,373	\$ 810,165	\$ 679,225	\$ 715,137
PSAP 9	Seattle Fire Department	\$ 623,758	\$ 986,288	\$ 826,883	\$ 870,602
PSAP 10	King County Sheriff's Office	\$ 690,589	\$ 1,091,962	\$ 915,477	\$ 963,881
PSAP 11	Valley Com	\$ 1,136,130	\$ 1,796,453	\$ 1,506,108	\$ 1,585,739
PSAP 12	Seattle Police Department	\$ 980,191	\$ 1,549,881	\$ 1,299,387	\$ 1,368,089
PSAP 13	Test PSAP	\$ 111,385	\$ 176,123	\$ 147,658	\$ 155,465
Totals		\$ 5,257,388	\$ 8,313,000	\$ 6,969,439	\$ 7,337,930
	Per Workstation Average Overall Cost			\$ 29,532	\$ 31,093
	Cost Savings Compared to Distributed Architecture			7.3%	10.3%
	Cost Savings Compared to Distributed Architecture			\$ 545,172	\$ 843,286

Similarly, from an OPEX perspective, the Platform Architecture had slightly lower estimated maintenance costs of approximately 10% to 12%. Across a 10-year operational model this could result in a savings of between \$583,000 and \$712,000. Annual savings though are relatively small, with the median cost estimate difference for the first year of maintenance being only approximately a \$37,000 savings. Tables 8 and 9 below show the lowest and highest cost estimates provided, and the mean and median values across the estimates provided.

Table 8 - Distributed Architecture 10-year OPEX Estimates

Annual Vendor O&M and Tech Refresh Costs for Distributed Architecture				
	Low	High	Mean	Median
Year 1	0	0	\$ -	\$ -
Year 2	\$ 253,981	\$ 467,665	\$ 369,164	\$ 385,846
Year 3	\$ 261,601	\$ 481,695	\$ 376,381	\$ 385,846
Year 4	\$ 269,448	\$ 496,146	\$ 383,813	\$ 385,846
Year 5	\$ 277,532	\$ 511,030	\$ 391,469	\$ 385,846
Year 5 Tech Refresh	\$ 1,104,400	\$ 961,400	\$ 1,009,067	\$ 961,400
Year 6	\$ 285,858	\$ 526,361	\$ 418,647	\$ 443,723
Year 7	\$ 294,434	\$ 542,152	\$ 426,769	\$ 443,723
Year 8	\$ 303,267	\$ 558,416	\$ 435,135	\$ 443,723
Year 9	\$ 312,365	\$ 575,169	\$ 443,752	\$ 443,723
Year 10	\$ 321,736	\$ 592,424	\$ 452,628	\$ 443,723
Year 10 Tech Refresh	\$ 1,270,060	\$ 1,105,610	\$ 1,160,427	\$ 1,105,610
10-Year Total Support Costs	\$ 4,954,682	\$ 6,818,068	\$ 5,867,252	\$ 5,829,008

Table 9 - Platform Architecture 10-year OPEX Estimates

Annual Vendor O&M and Tech Refresh Costs for Single Platform Architecture				
	Low	High	Mean	Median
Year 1	0	0	\$ -	\$ -
Year 2	\$ 208,680	\$ 446,490	\$ 334,690	\$ 348,899
Year 3	\$ 214,940	\$ 459,885	\$ 341,241	\$ 348,899
Year 4	\$ 221,389	\$ 473,681	\$ 347,990	\$ 348,899
Year 5	\$ 228,030	\$ 487,892	\$ 354,940	\$ 348,899
Year 5 Tech Refresh	\$ 739,000	\$ 961,400	\$ 769,933	\$ 739,000
Year 6	\$ 234,871	\$ 502,528	\$ 379,544	\$ 401,234
Year 7	\$ 241,917	\$ 517,604	\$ 386,918	\$ 401,234
Year 8	\$ 249,175	\$ 533,132	\$ 394,514	\$ 401,234
Year 9	\$ 256,650	\$ 549,126	\$ 402,337	\$ 401,234
Year 10	\$ 264,350	\$ 565,600	\$ 410,395	\$ 401,234
Year 10 Tech Refresh	\$ 849,850	\$ 1,105,610	\$ 1,033,007	\$ 1,105,610
10-Year Total Support Costs	\$ 3,708,852	\$ 6,602,949	\$ 5,155,508	\$ 5,246,374
Cost Savings Compared to Distributed Architecture			12.1%	10.0%
Cost Savings Compared to Distributed Architecture			\$ 711,744	\$ 582,634

Implications of Networking Costs

One additional cost element needs to be factored into the comparison of the two architectural alternatives, the cost of providing the networking to the individual PSAPs. In the Distributed Architecture, this networking is provided by the State E911 Program as a part of their deployment and operation of the ESInet-II. Therefore, the networking cost to King County for the Distributed Architecture is “free”.

This is not the case for the Platform Architecture, where the State has expressed that their ESInet-II responsibilities would end at the platform cores. Therefore, King County’s total cost model must also take into consideration the cost of networking from the host cores to the PSAPs themselves. There are two reference points for estimating what these costs may be. First, King County currently acquires SHNS service from CenturyLink in their current networking design. This network is essentially the same configuration needed for the Platform Architecture (fiber ring reliability connected to two host locations with dual connections to each PSAP). This service is currently costing \$738,000 per year. Once modified to include 3 host locations and some increased bandwidth to PSAPs (depending on the specific vendor’s specs), the annual cost would likely be slightly higher, so an annual cost estimate of \$750,00 could be inferred.

The State’s ESInet-II network vendor has also provided a preliminary annual cost estimate of \$500,000 for similar network redundancy and reliability. While the ultimate cost for networking for the Platform Architecture can’t be determined until a more detailed network design effort can be completed, the Task Force believes it is reasonable to use a value of \$700,000 per year for estimating the networking costs for the Platform Architecture.

The table below shows the total cost comparison between the two architecture alternatives.

Cost Comparison:

	Alt 1 – Distributed Architecture	Alt 2 – Single Platform
One-Time System Implementation Costs (CAPEX) ¹	\$8,181,217	\$7,337,930
Annual System Maintenance Costs (OPEX) – 1 st year ¹	\$385,846	\$348,899
10-year OPEX (incl. refresh x2) ¹	\$5,829,008	\$5,246,374
Annual Networking Costs ²	\$0	\$700,000
10-year Networking Costs ²	\$0	\$7,000,000
Total: 10-year Cost of Ownership	\$14,010,225	\$19,584,304

¹ CAPEX and OPEX system costs based on median of cost estimates received.

² Networking costs is a placeholder for the two networks for Single Platform (pending vendor estimate is likely to be lower).

Exhibit A – Architectural Principles

1. The Public Safety Principle - *We should ensure service exists that protects the public's safety above all else.*

We need to balance a number of factors when designing and operating a E911 system. However, our highest priority is to ensure adequate service exists to protect the public and responders.

Rationale: It is important to understand the current issues and factors that are shaping both the demand for E911 services within the service area, as well as the factors affecting the technologies themselves. However, protecting the public and responders is our highest priority.

Implications: Not all technology strategies can be evaluated using traditional cost benefit analysis (CBA) criteria. There will be times when other factors such as public safety that need to be considered as priority in resolving a decision.

2. The Security Principle - *All systems and solutions will need to meet at least the minimum level of security defined.*

The security of our systems will only be as strong as the weakest link. Therefore, we will include all components and approaches that can affect security in the system design.

Rationale: There are costs associated with making systems secure. And though we need to balance cost and effectiveness, security must meet a minimum acceptable level so as to not risk the ability to provide secure public safety communication

Implications: Minimum security standards will need to be defined for our systems based on the needs of all jurisdictions in the coverage area. These standards should include federal guidelines if they exist. Further, all services must adhere to those standards including vendor managed services. Finally, security plans need to include all aspects of the system design that need to be protected. This includes not just the E911 systems themselves, but supporting assets, and vendor managed components of the system

3. The Fair and Equitable Principle - *We should seek to provide a fair and equitable access so that all communities can receive and perceive value.*

We will balance the value of emerging and next generation technologies to the E911 program and the PSAPS with the value to the various communities in the region. This will mean considering the ability of residents to utilize and access E911 services.

Rationale: While no one questions the need for public safety, we need to make sure that King County residents have the ability to access E911 services as technology advances and next generation solutions are considered.

Implications: The Equity and Social Justice (ESJ) lens needs to be applied to all new technologies that are considered. Solution costs and benefits will need to be viewed from

all perspectives, and we need to understand the impact of solutions to the various communities and their ability to utilize the technology solutions. We will also balance cost-effective solutions with state-of-the-art solutions.

4. The Cost Effectiveness Principle - *Financial decisions should be based on the most cost-effective solutions consistent with documented needs.*

Rationale: The public's tax dollars should be spent as wisely as possible.

Implications: When two solutions meet needs equally well, the lower cost solution should be selected. When one higher cost solution meets our needs and one lower cost solution does not meet our needs, those solutions should not be seen as equivalent. Costs should be calculated as long-term total costs.

The System will be developed in a manner that maximizes the price advantages realized in large-scale and long-term purchasing agreements. It is expected to demonstrate the wisest possible use of taxpayer dollars when compared to other E911 systems, and to realize the benefits of improved public safety communications for all county residents. Needs should be based on data whenever possible.

5. The Capacity Principle – *The capacity of the system should be designed to meet peak demands without service interruption.*

Public Safety systems must have enough capacity not only to meet average daily demands, but to meet peak demands when they are needed most

Rationale: Providing capacity that does not strive to meet peak demands can put lives at risk

Implications: Systems should be scaled to meet peak capacity and modeling should be used to predict demand. Capacity planning should take into account growth in population and the ability of the E911 technology architecture to scale to the anticipated growth. Whenever possible, we will design systems with the ability to flexibly scale on demand, as opposed to building a static capacity of the maximum expected usage.

6. The Availability Principle - *Solutions should be available at all times without service interruption*

Systems should be designed, operated, and maintained to be available 100% percent of the time within the coverage area as feasible.

Rationale: The amount of time a public safety solution is unavailable is directly proportional to the increased risk to lives and property.

Implications: Reliability needs to be a high priority in the design, operation, and maintenance of a system and solutions should be design with no single point of failure. System designs should include mechanisms that allow failover of a key component without interrupting service. Systems should be appropriately monitored, including mechanisms to alert of possible failure or service degradation conditions. Systems must be properly

maintained utilizing industry best operational practices and standards. There must be standards for system and subsystem performance and performance should be regularly reported.

7. The Interoperability Principle - *Software and hardware should conform to defined standards that promote interoperability for data, applications, and technology.*

Rationale: Standards help ensure consistency, thus improving the ability to manage systems and improve user satisfaction, and protect existing IT investments, thus maximizing return on investment and reducing costs. Standards for interoperability additionally help ensure support from multiple vendors for their products, and facilitate supply chain integration.

Implications: Interoperability standards and industry standards will be followed unless there is a compelling business reason to implement a non-standard solution. A Governance process for setting standards, reviewing and revising them periodically, and granting exceptions must be established. The existing IT platform and supporting technology must be identified and documented.

8. The Convergence Principle - *We should converge toward common solutions, approaches, and standards.*

The design of our solutions and approaches should move us toward common technologies and ways of doing business that enhance our ability to provide service and leverage economies of scale whenever possible.

Rationale: We are better stewards of the taxpayers' money when we are not expending extra resources to integrate dissimilar solutions in order to interoperate. Our ability to interoperate is maximized when we have similar solutions and standards

Implications: Convergence points between partners that make up the E911 program and service need to be identified and mapped into a multi-year roadmap. Adherence to Federal and State standards and guidelines will provide increased convergence opportunities. Opportunities beyond technologies and standards should be explored – for example, shared purchasing and provisioning could yield economies of scale.

Exhibit B – Technology and Operations Strategies Matrix

Strategic Category	Strategic Objectives (WHAT)	Technology Strategies (HOW)	Objective Measures
NG911 Readiness Preparing for the emerging capabilities of NG911 (text, photos, video, telematics, etc.) with a roadmap that adopts and adapts to technology changes, and that balances operational needs with improved service and cost effectiveness.	Objective #1: Adhere to Standards King County will only pursue technology investments that are consistent with the NENA i3 framework and compatible with the ESInet being deployed by the State of Washington.	1. Monitor NENA i3 standards (NENA-STA-010.2-2016) to guide decisions on technologies and service providers. 2. Monitor NENA Network & Interoperability Standards (03-004; 03-503; 03-506) to achieve compliance and guide future architectural decisions. 3. Monitor Washington ESInet standards and guidelines, such as E911 and NG911 Systems and Network Infrastructure and Security Standards for Washington State Public Safety Answering Points, to guide integration efforts and future decisions.	Ongoing monitoring of Standards and assessment of systems against those Standards
NG911 Readiness Workgroup: Chelo Picardal (Bellevue) Kenn Moisey (WA State) Tim Osgood (Fire Districts) Jess Nelson (Valley Com) Kevin Kearns (IXP)			

Strategic Category	Strategic Objectives (WHAT)	Technology Strategies (HOW)	Objective Measures
<p>Applicable Regulations or Standards:</p> <p>NENA Detailed Functional and Interface Standards for NENA i3 Solution (NENA-STA-010.2-2016, 06/10/2016)</p> <p>NENA Network and Interoperability Standards (03-004; 03-503; 03-506)</p>	<p>Objective #2: NG911 Features</p> <p>King County will identify a group of NG911 features for consideration and adoption during the 10-year Strategic Plan timeframe. These Features are NG911 capabilities that the PSAPs would use in a hands-on manner in handling 911 interactions with the calling public.</p>	<ol style="list-style-type: none"> Pursue NG911 features that have the greatest customer and operational benefit. Potential phasing in of new features: <ul style="list-style-type: none"> Text-to-911: Interim text-to-911 in near-term transitioning to end to end text-to-911 integrated in ESInet-II within 2 years and eventually Real Time Text (RTT) beyond 3 years Evolved Text-to-911: As NG911 capabilities evolve, further enhancements such as the ability to include photos or video in text-to-911 interactions will emerge. Telematics Services Interfaces – The ability to receive data from telematics services for vehicle collisions Over-the-top (OTT) applications – As OTT application emerge, some may be identified as beneficial for use in King County PSAPs. Evolution of Standards – Monitor the evolution of standards and vendor adoption to establish maturity, viability and supportability of new features Decision Criteria - Use governance process being established to understand benefits of any new feature, weigh operational and fiscal impacts, develop decision criteria and decide phasing of deployment. Implementation Timeline – Collaborate with PSAPs and the E911 governance process to establish implementation timelines for adopted Features. 	<p>Ongoing monitoring of Standards and assessment of systems against those Standards</p>

Strategic Category	Strategic Objectives (WHAT)	Technology Strategies (HOW)	Objective Measures
	<p>Objective #3: NG911 Functions</p> <p>King County will identify a group of NG911 functions, most of which are characteristics of how the ESInet-II will function, that will improve call delivery and capabilities at the PSAPs.</p>	<ol style="list-style-type: none"> 1. Deploy NG911 functions that have the greatest customer and operational benefit. Potential phasing: <ul style="list-style-type: none"> • Complete PSAPs migration to ESInet-II (2019) • Geospatial Routing – Transition of call routing capabilities to geospatial-based routing. Requires high accuracy of ESInet's GIS data and coordination with County GIS data. • Fully support session initiated protocol (SIP) standards end-to-end throughout the ESInet and PSAP CPE environment (contingent on CPE being fully NENA i3 compliant) • End-to-end security from ESInet to customer premise equipment to call-receiving workstation • Implement policy-based routing for alternate routing based on capacity needs • Consider implementing capabilities such as additional data repository (ADR), location information with calls and agency locator support (contingent on CPE being fully NENA i3 compliant) 2. Monitor the evolution of standards and vendor adoption to establish maturity, viability and supportability of new functions 3. Implementation Timeline – Collaborate with PSAPs and the E911 governance process to establish implementation timelines for adopted Functions. 	<p>Ongoing monitoring of Standards and assessment of systems against those Standards</p>

King County E-911 Strategic Plan Technology & Operations Final Report — August 2, 2017

Strategic Category	Strategic Objectives (WHAT)	Technology Strategies (HOW)	Objective Measures
	<p>Objective #4: Evaluate and Adopt a System Architecture</p> <p>King County will identify an overall system architecture for the PSAP Customer Premise Equipment (CPE) and inter-PSAP networking to allow King County PSAPs to effectively access and utilize the identified NG911 Features and Functions.</p>	<ol style="list-style-type: none"> 1. Identify Options – Identify system architecture alternatives that have proven successful in other comparable jurisdictions, adhere to NENA i3 standards and are judged to be applicable to King County's needs. 2. Review Options Against Principles – Review these options against the Architecture Principles, and identify and compare their individual advantages and disadvantages, so that the strategic planning process can select a system architecture for implementation moving forward. 3. Review Options on Financial Criteria – Coordinate with the Finance Taskforce to assess financial impacts of each option. 	<p>Develop this material as part of the Final Draft Report of this Taskforce</p>
<p>Integrated and Interoperable Systems</p> <p>Ensuring systems are integrated effectively to achieve reliable interoperability across organizations and functions in delivering seamless 911 services across the region.</p>	<p>Objective #1: Interoperability Features</p> <p>King County will identify a group of interoperability features for consideration and adoption during the 10-year Strategic Plan timeframe. These Features may include: survivability, geographic and carrier diversity, high availability, and resiliency.</p>	<ol style="list-style-type: none"> 1. Work with internal and external industry experts to identify and understand: <ul style="list-style-type: none"> • Current carrier capabilities and potential for carrier diversity • Best practices to achieve a highly available, resilient and diverse system • Existing or future MOAs with other agencies, potentially outside of the region, for developing a continuity of operations plan bolstering survivability from the State ESInet • Virtual PSAP capabilities • Mobile PSAP capabilities • Real-time monitoring and baseline data capture (for example to adapt to surges in call volumes) 	<p>Ongoing monitoring of Standards, industry practices and local needs so that local systems can be adapted over time to best meet those needs</p>

Update: 11/29/17

Strategic Category	Strategic Objectives (WHAT)	Technology Strategies (HOW)	Objective Measures
Integrated and Interoperable Systems Workgroup: Russ St. Meyers (Seattle) Jess Nelson (Valley Com) Jessica Sullivan/Ken Rhodes (KCSO) Kevin Kearns (IXP) Applicable Regulations or Standards: NENA Detailed Functional and Interface Standards for NENA i3 Solution (NENA-STA-010.2-2016, 06/10/2016)		2. Monitor the evolution of standards and their adoption and implementation within ESinet-II, to evaluate the maturity, viability and supportability of new features 3. Implementation Timeline	
	Objective #2: Interoperability Functions King County will identify a group of Interoperability Functions, most of which are characteristics of how the ESinet will function, that will improve call delivery and capabilities at the PSAPs.	1. Work with internal and external industry experts to Identify and understand: <ul style="list-style-type: none"> • How PSAPs are currently interconnected and highlight processes that work well and processes that do not or which can be improved. • Needs of each PSAP for interoperability to their respective backup PSAP. • Network bottlenecks, busy signal data and current roll-over capabilities • Potential for Class of Service and other trunking efficiencies • Evolving routing protocols (ECRF, LIS, etc.) • Interoperable data protocols (EIDD, XML, etc.) 2. Monitor pace of standard development and vendor adoption to establish maturity, viability and supportability of new functions 3. Develop Functions Roadmap	Ongoing monitoring of Standards, industry practices and local needs so that local systems can be adapted over time to best meet those needs

King County E-911 Strategic Plan Technology & Operations Final Report — August 2, 2017

Strategic Category	Strategic Objectives (WHAT)	Technology Strategies (HOW)	Objective Measures
Secure and Resilient E911 Protecting the 911 call flow from the State's ESinet through the E911 system and onto the PSAPs. Ensuring the resiliency of the E911 system and operations. Secure and Resilient E911 Workgroup: Bill Kehoe (KC) Ralph Johnson (KC) Dee Hathaway (NORCOM) Nathan Way (NORCOM) Kevin Kearns (IXP)	Objective #1: Security Standards Understand and start to apply E911 security standards and King County Security and Privacy policies that align with the E911 systems and program and PSAP's.	1. Ensure appropriate level of staffing and funding is in place to continually meet the security objectives of the E911 standards requirements. 2. Train staff and have staff that work with security issues complete an industry approved security certification. Target would be to identify the approved security certificate program by 1Q 2018 and have 25 staff in the E911 program and PSAP's take the training in 2018 and earn the certificate. The training will be available in subsequent years for new staff that qualify to take the training, additional staff that did not take the training in earlier years, and staff that want to refresh or renew their certificate.	All E911 program and PSAP staff are required to take security awareness training on a yearly basis to stay current on the security policies and standards and review any changes or additions to the policies and standards. The target will be 75% of staff in the first year, 85% of staff in the second year, and 100% of staff in the third year.
	Objective #2: Security Program Develop an E911 security program that is aligned and integrated with the King County Information Assurance / IT Security Program to ensure that security policies, awareness and practices are understood and integrated into all components of the E911 program. Ensure data and security roles and responsibilities as described by the NENA security standards are assigned and understood.	Establish E911 security policies and practices with PSAPs that clearly articulates expectations and roles and responsibilities between E911 Program and PSAPs and King County Information Assurance policies, in adherence to KC IT Security Program, established IT security best practices and 911 security standards.	A security governance structure has been developed and documented. The E911 program and PSAP staff are engaged in the governance structure and in meetings. The target will be to develop the governance structure in 1Q 2018 so that it can be informed by the current E911 Strategic Planning group and the Governance sub-committee.

Strategic Category	Strategic Objectives (WHAT)	Technology Strategies (HOW)	Objective Measures
Applicable Regulations or Standards: State of Washington PSAP System and Network Security Standards (Published 09/18/2014) NENA Security for NG911 Standard (NENA 75-001, 02/06/2010) NENA NG911 Security Audit Checklist (NENA 75-502, 12/15/2011) FCC Task Force on Optimal PSAP Architecture (published 01/29/2016)	Objective #3: Operations and Architecture Continue to enhance resiliency with focus on reliability of systems (able to handle expected load), increasing redundancy (e.g., eliminating single points of failure), and increasing diversity (e.g., minimize overreliance on single providers, vendors or equipment). The architecture of the system should optimize availability (i.e. the ability for a PSAP(s) to serve as a backup to other PSAP's).	Implement IT operational best practices to mitigate security risks including the disciplines of asset management, change management, problem management, incident management, patch management / software and hardware upgrades, and lifecycle management.	Implement a E911 Tier 4 board at the E911 center and begin to measure and report key performance: availability, blocked calls (not able to be delivered to the PSAP), calls in the queue (ESInet), dropped calls, unanswered calls, calls answered, calls dispatched, type of call (landline, cell, VoIP, text).
	Objective #4: Vendor Contract Management Standardize the Vendor selection and on-going monitoring processes by developing standard business and technical specifications, SLA requirements that can easily be measured, and accountability language with appropriate penalties for non-compliance. Require the E911 program to conduct and require security or technical audits on a regular basis as required by NENA and State standards.	Ensure vendor management best practices are followed to minimize risks of failure from mission critical vendors and service providers. Require quarterly reports from all E911 program vendors on performance against the contract SLA's. Audit requirements.	Standard security requirements and language are developed in coordination with KCIT Information Assurance and contracts staff, PSAP staff, and E911 program staff. The target is to include the standard language in all new vendor contracts and RFP's developed by the E911 Program Office and the PSAP's.

Strategic Category	Strategic Objectives (WHAT)	Technology Strategies (HOW)	Objective Measures
Optimized Operations Providing reliable 911 services to King County residents that meets or exceeds standards. Delivering calls from State network to PSAPs across a network, databases, equipment and applications. Ensuring accurate call location and routing. Optimized Operations Team: Deb Flewelling (KC) Aaron Barak (KC) Bob Potts (KC) Greg Hough (Seattle) Micki Singer (Bothell) Kevin Kearns (IXP)	Objective #1: Standards and Policies Define & develop standards and policies that encompass both operational & maintenance activities, security, and technology.	1. Define appropriate demarcation between program & PSAPs that guide program mandated policies/standards & PSAP policies/standards. 2. Consider existing standards (other PSAPs or organizations) 3. Policies/standards should result in cost savings or affirm core program mission & goals (we are not to seek standards & policies for their own sake)	1. Transition Program office to KCIT 2. Identify/adopt/create policies & standards in partnership with relevant disciplines. 3. Review standards compliance quarterly via the TBD governance framework.
	Objective #2: Delivery Framework Establish a delivery framework that imposes appropriate governance & controls on both project and change management workloads.	1. KCIT Delivery Framework – Adapt current KCIT delivery framework strategies to the responsibilities of the E911 Program Office. 2. Project Management Standards – Implement industry standard program and project management techniques such as PMP & /Praxis.	1. Transition Program office to KCIT 2. Adopt existing KCIT delivery framework by EOY 2017.
	Objective #3: Operational Framework Adopt an ITIL based operational model that clearly defines & governs operational, maintenance, and forward looking workloads. Implement change control, major incident process's, and problem management disciplines.	1. KCIT Operational Framework – Adapt current KCIT operational framework strategies to the responsibilities of the E911 Program Office. 2. Problem Management – Implement change control, major incident processes, and problem management disciplines consistent with existing KCIT practice.	1. Transition Program office to KCIT 2. Adopt existing KCIT ITIL Operations framework inclusive of incident, change, and problem methodologies.

King County E-911 Strategic Plan Technology & Operations Final Report — August 2, 2017

Strategic Category	Strategic Objectives (WHAT)	Technology Strategies (HOW)	Objective Measures
	Objective #4: Business Continuity Management (BCM) Establish a BCM strategy that delineates between local PSAP BCM and regional BCM and establishes both technical & non-technical response postures.	1. KCIT Business Continuity Management – Adapt current KCIT BCM methodologies to the E911 Program Office. 2. KCIT Coordination – Coordinate overall BCM planning within the context of the actions already identified related to NG911 Readiness, establishing integrated and interoperable systems, and any architectural changes to the overall NG911 environment in King County.	1. Transition Program office to KCIT 2. Adopt existing KCIT BCM methodologies.
	Objective #5: Call Routing and Delivery Establish a process for determining the appropriate routing of calls to PSAPs that takes into consideration the capacities and capabilities of the PSAPs receiving those calls.	1. Routing Criteria – Establish mutually agreeable criteria with the PSAPs for determining how routing decisions are made, particularly for the ever-changing world of cell site additions or coverage changes by multiple wireless carriers. 2. Periodic Review – Periodically review and adjust the routing criteria to make sure they remain consistent with PSAP operational needs, capacities and capabilities.	1. Establishment of initial call routing decisions as part of ESInet-II deployment. 2. Ongoing review with PSAPs.
Accessible and Equitable Service Increasing equitable access to the E-911 service for all communities and individuals served, with specific focus on lessening obstacles faced by specific groups.	Objective #1: Public Education and Outreach The E911 Program Office will improve public understanding of the purpose of the E911 program and how it works.	1. The King County E911 Program Office will sustain its public education and outreach efforts, in close coordination with community-based organizations, the PSAPs and other public safety agencies. 2. Partner with community organizations. 3. Partner with organizations that innovate with special needs communities to identify innovations designed for specific needs and determine if they can enhance access to E911 services.	Within the 1 st year of this Plan, create a periodic reporting mechanisms to demonstrate these activities are being accomplished.

King County E-911 Strategic Plan Technology & Operations Final Report — August 2, 2017

Strategic Category	Strategic Objectives (WHAT)	Technology Strategies (HOW)	Objective Measures
Accessible and Equitable Service Workgroup: Krista Camenzind (KC) Kellie Shapard (ADWAS) Andres Mantilla (CBE) Kate Nolan (CBE) Kathy Lombardo (KC) Laura Pitarys (KC) Meg Goldman (KC) Kevin Kearns (IXP)		4. Share community feedback with other public safety agencies. The public may not distinguish E911 services from other public safety services, so any feedback received is best shared with these other agencies.	
	Objective #2: Reducing Barriers The E911 Program Office will continue to identify barriers to accessing E911 services and work to remove or mitigate those barriers.	1. Partner with PSAPs to continue and enhance training for call takers to maintain and improve their skills when dealing with 911 callers that do not communicate verbally or in English. 2. Support access to phone services for low-income people. The cost of cell phones and data plans can be a barrier for low-income people access E911 services. Partnering with other King County agencies or private and non-profit organizations may help address this.	Within the 1 st year of this Plan, develop mechanisms to routinely gather community feedback and identify training needs. Then, in the 2 nd year, develop a process with the PSAPs to deliver training as needed.
	Objective #3: Modernizing Technology Modernize the E911 systems in King County PSAPs to eliminate barriers for the deaf community in accessing E911 services.	1. Implement Text-to-911 and continue to enhance Text-to-911 capabilities as the State ESInet-II completes its deployment and King County PSAPs are upgraded to NENA i3 capable systems. 2. Seek ongoing feedback from the deaf community and others about how E911 technologies are meeting community needs.	Complete the implementation of Text-to-911 by Q1 2018. Within the 1 st year of this Plan, develop mechanisms to gather community feedback on the effectiveness of new solutions, and then expand this effort to include new and innovative technologies when appropriate.

Update: 11/29/17

Exhibit C: Equity Outreach and Engagement for the King County E-911 Strategic Plan



Equity Outreach and Engagement for the King County E911 Strategic Plan

Prepared for the Equity Subcommittee of the Technology and Operations Task Force

Kate Nolan, CBE Strategic
Andrés Mantilla, CBE Strategic

EXECUTIVE SUMMARY

As part of the King County’s Regional E911 Strategic Planning, the Equity Subcommittee of the Technology & Operations Task Force asked CBE Strategic to reach out to several organizations that are advocates for communities with special challenges related to accessing 911 services. Participating organizations OneAmerica (representing non-English speakers); Somali Community Services (representing those with low-incomes and seniors). Bellevue College Disability Resource Center (representing youth); Abused Deaf Women Advocacy Services, Hearing Speech and Deafness Center, and Deaf Blind Services Center (representing deaf/hard of hearing); and Refugee Women Alliance (representing communities of color).

Input revolved around several themes, including *technology, affordability, education & information, and other issues or concerns*.

This effort led to the following seven recommendations from the Subcommittee:

1. Implement text to 911;
2. Seek ongoing feedback about how current E911 technologies meet the needs of the community;
3. Provide timely training to call takers to better meet the emerging needs of the community;
4. Support access to up to date phone services for low-income people;
5. Maintain and increase educational outreach;
6. Partner with organizations that innovate specifically for these communities; and
7. Share community feedback with other agencies for taking action.

TABLE OF CONTENTS

BACKGROUND	3
SELECTION AND ENGAGEMENT APPROACH	3
<i>Schedule</i>	4
<i>Participating Organizations</i>	5
QUESTIONS	6
THEMES	6
RECOMMENDATIONS	12
1 – IMPLEMENT TEXT TO 911	12
2 – SEEK ONGOING FEEDBACK ABOUT how CURRENT E911 TECHNOLOGIES MEET THE NEEDS OF THE COMMUNITY	12
3 – CONTINUE AND EXPAND TRAINING TO CALL TAKERS	12
2 – SUPPORT ACCESS TO PHONE SERVICES FOR LOW-INCOME PEOPLE	13
5 – MAINTAIN AND INCREASE EDUCATIONAL OUTREACH	13
6 – PARTNER WITH ORGANIZATIONS THAT INNOVATE SPECIFICALLY FOR THESE COMMUNITIES	14
7 – SHARE COMMUNITY FEEDBACK WITH OTHER AGENCIES	14
 CBE Strategic	 2

BACKGROUND

The purpose of this report is to document comments, concerns and themes identified in community conversations on issues of access to the E911 system, with a focus on understanding barriers of access experienced by these communities. While this engagement effort focused on technology and operations questions, the results of the process are relevant to all aspects of the strategic planning process and this report will inform the entire E911 strategic plan. This process follows King County's commitment to equity and social justice and is an attempt to include a wide range of voices into E911 strategic planning discussions.

The King County E911 strategic planning process began in 2016 with a collaborative scoping exercise among regional leaders and Public Safety Answering Points (PSAPs) to address priorities for technology improvements, funding and decision-making. As part of the strategic plan, guiding principles were identified by a Leadership Group to drive common thinking and values. The Leadership Group is a body of elected officials and public safety professionals whose task is to oversee the completion of the E911 Strategic Plan (hereafter Strategic Plan) and forward its recommendations to the King County Executive and King County Council. One of these guiding principles was equity. For this Strategic Plan, equity was defined as access to the E911 system and services.

Given that the intent of this outreach effort was to inform new technological investments and operational efforts, it was agreed that discussions of equity would be part of the Technology and Operations Taskforce. However, it was also recognized that equity impacts are significant in all areas of the Strategic Plan and, as such, should also be considered by the Governance and Finance Task Forces. The Technology and Operation Task Force formed an Equity Subcommittee to lead an inclusive process that engaged community representatives and groups in a series of conversations to identify current barriers to access the E911 system and determine which of these barriers could be overcome through changes or improvements to E911 technology and operations.

CBE Strategic (CBE) was retained to engage community leaders and groups in facilitated conversations around access to E911 system and services. This report summarizes community feedback and provides recommendations on technological and operational changes or initiatives that could reduce barriers that communities currently face when accessing the E911 system.

SELECTION AND ENGAGEMENT APPROACH

During the scoping process the Leadership Group identified four communities to engage in community conversations: deaf/blind, low-income, non-English speaking and youth. As conversations continued the number of groups expanded to six to include seniors and communities of color. Following this recommendation, the Equity Subcommittee identified six organizations to engage in a facilitated conversation.

The organizations were selected based on connections to the community, areas of specialized focus, capacity to participate, and geographic representation throughout the County. In several cases, organizations declined to participate due to limited staff capacity or directed CBE to a different group that could better represent the community. The Deaf/Blind, Deaf and Hard of Hearing community and One America asked that CBE meet with more than one group within their community to achieve a diverse perspective and understand specific concerns.

Participants for some of the organizations at times overlapped, which provided CBE an opportunity for intersectional engagement. For example, CBE's outreach to the Somali community gave us a space to engage both communities of color, non-English speakers and seniors. Moreover, during our work with the Abused Deaf Women's Advocacy Services (ADWAS) we expanded outreach to Deaf/Blind and other partner groups. Overall more than 60 people participated in these meetings, with more providing indirect feedback through their organization staff and leadership.

CBE tailored the engagement process to match what was most efficient and easiest for the participants. In total, there were seven in-person meetings and one phone meeting. In four cases, CBE and King County E911 Program Office (hereafter KC Program Office) staff participated in an existing activity or class, in three other instances CBE and staff scheduled separate in-person meetings with members of the organization. Bellevue College Disability Resource Center staff surveyed students and relayed the information to CBE. A representative of the KC E911 Program Office attended most meetings to answer technical questions and to build relationships with community organizations. A stipend was offered to each participant group for their time and support organizing.

SCHEDULE

The following schedule for community participation was created to allow for meaningful engagement with community organizations as well as to meet the project deliverables as outlined by the strategic planning timeline.

- a) *Small Group Meetings* - Focused on identifying and assessing barriers of access and technology needs.
- b) *Feedback on draft Equity Committee recommendations* – Following the submission of the equity draft report, and Technology and Operations draft recommendations to the Planning Group, CBE will again reach out organizations to check in on how feedback was represented as well to discuss future involvement in E-911 public outreach and education efforts, if appropriate. This outreach will take place in August 2017.
- c) *All community group meeting* –Present the draft Strategic Plan, focusing on the relevant strategies that apply to each organization. Outreach and written findings will be completed by September 1, 2017 to allow feedback to be incorporated in October prior to review by the Leadership Group.

Issues that have been identified during community outreach as outside the scope of the Strategic Plan are compiled and assigned to appropriate agencies in **Appendix I**.

PARTICIPATING ORGANIZATIONS

Non-English Representation – OneAmerica

The mission of OneAmerica is to advance the fundamental principles of democracy and justice at the local, state and national levels by building power within immigrant communities in collaboration with key allies. For this project, CBE and KC E911 Program Office staff engaged Non-English One America members at two events including a weekly lunch for East African Seniors in Seattle’s Central District and at an English as Second Language class for Spanish speakers in the City of SeaTac. One America organizers provided appropriate interpretation for participants.

Low-Income Representation/Seniors¹ – Somali Community Services

The mission of Somali Community Services is to work towards the success of refugees to undergo a smooth transitional process, and attain self-sustainable status in their new country by focusing on community-based efforts including education, awareness, and safety. CBE and KC E911 Program Office staff attended a weekly class for seniors in South King County. The organizers of the meetings provided appropriate interpretation for participants.

Youth Representation – Bellevue College, Disability Resource Center

The Disability Resource Center (DRC) is dedicated to service excellence in the provision of comprehensive and flexible accommodation plans, working with students, instructors, staff, administration and community contacts to ensure the successful academic endeavors and goals of qualified Bellevue College students with disabilities. Currently, there are 1,600 students currently registered with the DRC. Given the time of year in the academic calendar, DRC hosted their own conversation with students, faculty and staff. DRC compiled this feedback and reviewed responses with CBE.

Deaf/Hard of Hearing Representation – Abused Deaf Women Advocacy Services, Hearing Speech and Deafness Center, Deaf Blind Services Center

Abused Deaf Women Advocacy Services (ADWAS) empowers Deaf and Deaf/Blind survivors of domestic violence, sexual assault and harassment to transform their lives, while striving to change the beliefs and behaviors that foster and perpetuate violence. As part of this outreach and in partnership with ADWAS, CBE and staff also engaged with the Hearing Speech and Deafness Center (HSDC) and the Deaf Blind Services Center (DBSC). The HSDC fosters inclusive,

¹ CBE initially engaged with the Issaquah Senior Center, Renton Senior Center, and Auburn Senior Center each of which declined to participate due to staff capacity or unavailability. Conversations with Somali Community Services allowed for opportunities for intersectional engagement with communities of color, non-English speakers and seniors.

accessible communities through communication, advocacy, and education. The DBSC strives to increase the independence of deaf-blind individuals by supporting their ability to perform daily life tasks, bring down communication barriers, and enhancing self-confidence. CBE and KC E911 Program Office staff met with representatives from all three groups on separate occasions. Interpretation services were provided by King County.

Communities of Color – Refugee Women’s Alliance

The mission of the Refugee Women’s Alliance (ReWA) is to promote inclusion, independence, personal leadership, and strong communities by providing refugee and immigrant women and their families with culturally and linguistically appropriate services. CBE and KC E911 Program Office staff attended a childcare class in ReWA’s Kent office.

QUESTIONS

CBE, working with the Equity Subcommittee, finalized this list of questions to act as a loose facilitation guide. In each conversation, the facilitation style was informal, encouraging participants to give feedback on this topic and at times on other opinions of community-police relations.

1. How are you currently requesting 911 police, fire and medical services?
2. What is your experience when you call 911?
3. Do you feel informed about using 911?
 - a. What are better ways to communicate?
4. Does the current translation, interpretation, TTY/TDD services offered adequately serve your community?
5. Are there other technological changes that could enhance your access or make it easier to use 911?
6. What is the most important change that could be made to make it easier to use 911?
7. Other feedback?

THEMES

Community feedback was categorized in four main areas: technology, affordability, education, and issues that fall outside the scope of the Strategic Plan. Below are brief narratives of community interaction along with bulleted concerns that highlight the main comments.

Technology

Questions centered on the technology used to access the E911 system, how well it works, and what changes could be made to improve experience of contacting 911.

Current Technologies Sufficient for Some Communities and Not for Others.

Most participants reported that when calling 911 on a land line or cell phone, the current technology is sufficient. If participants had access to a phone, they felt comfortable calling 911,

or asking someone to call for them. Additionally, participants felt that foreign language interpretation services, when used, worked well, and that in most cases the response to the emergency call was prompt.

Current Technologies are not Sufficient for Deaf, Hard of Hearing, and Deaf/Blind Communities — Text to 911 is a Priority

Current technology is not sufficient for deaf, hard of hearing, deaf-blind, speech impaired, or cognitively disabled individuals. Without the ability to call using a phone, the options become limited, difficult to use, and cost prohibitive. Implementation of Text-to-911 is the highest priority for the deaf, hard of hearing, and deaf/blind communities. In addition, conversations with Bellevue College revealed an increase in autistic students, some whom are non-verbal. With disability laws changing nationally to accommodate these students, campuses nation-wide will start seeing more students with these disabilities.

Significant Barriers when Voice-Calling is Not an Option

In cases where using a phone to voice-call 911 was not an option, current alternate methods for the deaf, hard of hearing, and deaf/blind communities to communicate with 911 are also insufficient. Each technology below was identified as having specific barriers in interacting with the E911 system.

- **TTY** (Text Telephone) technology was identified as necessary — and still widely used by seniors in the deaf community — but is viewed as cumbersome and outdated.
- **Smart911** was not seen as a solution for 911 access for deaf or deaf/blind communities. There were several complaints with the function of Smart911 and questions around its utility. Several respondents cancelled their Smart911 accounts due to the rolling 6-month requirement to update their personal data.
- **Video phone** technology is provided to deaf individuals for free, but requires high speed internet and videophone setup at home, workplace or shared community location. For those with videophone accessibility on smartphones Wi-Fi coverage and connection speeds can be challenging. Participants also voiced a strong interest in sending pictures or video to 911. Those who were deaf or deaf/blind or speech impaired, especially youth, were very familiar and comfortable with the technology around video (i.e. Skype, Facetime) and wanted to explore the possibility to use that format to communicate with 911.

For Deaf, Deaf/Blind, and Hard of Hearing communities, smart phones are preferred but are often cost prohibitive

Smart phones are the preferred alternative for the deaf community; they allow easier and more effective access to video and text. Additionally, they have applications that enhance accessibility. At the same time, video requires large amount of data, which means that limited data plans are barriers for people who prefer video to communicate. Phones that do not have easy video, text, or other accessibility features (or phones that do not have sufficient data allowances to

accommodate more than a couple hours of video calling) have limited usability for the deaf community.

Community members who had limited English reading and writing proficiencies — or those that are blind or deaf-blind — voiced concerns about the ability to identify where they or the emergency is located to the E911 call receiver. This impedes the prompt arrival of services, particularly if the call is from a cell phone in an area with poor location accuracy.

Foreign Language Interpretation Services Meet Callers' Needs

Currently, King County contracts with translation service providers for spoken non-English language translation services. Non-English calls are connected directly to the providers by the public safety call receiver. The provider then brings an appropriate translator onto the line. The County has the responsibility to monitor and maintain the standard for spoken non-English language translation services.

Participants reported that spoken non-English language translation services work well with few exceptions. For example, in one case there was an issue of misidentifying a foreign dialect. At times, there were issues of interpretation not being brought on-line in a timely manner and one instance where the caller couldn't hear the interpreter.

Sign Language Interpretation process may be problematic

For the deaf, hard of hearing, and deaf-blind communities, callers are connected to an American Sign Language (ASL) interpreter services first, who then contact 911. Deaf or speech impaired callers choose an interpreter and can if necessary change interpreters. There are multiple factors that could lead to an interpreter not being able to perform the job as needed, including levels of ASL proficiency, issue sensitivity, or regional signing expertise. If proficiency is an issue, the interpreter may not fully be able to communicate with 911 in the event of an emergency. Allowing for additional options in choosing interpreters with regional or area-specific specializations (i.e. medical expertise) was a priority for the community and could support the success of interpretation. Most importantly, the community felt this problem could be resolved with Text to 911.

Third-party emergency response technology is a priority for seniors

In some instances, Life Line or some other third-party emergency response technology was preferred. Seniors and those in assisted living preferred having access to this technology over land line calling. In cases where Life Line, or a similar third-party technology was not available, seniors prioritized getting access to this service. Non-English speaking seniors appreciated that the Life Line button did not require verbal communication.

Affordability

Cell Phone and Limited Data Plan Costs are Barriers for Low-Income People and those who prefer or require video applications to contact 911

The technology associated with accessing 911 has varying costs. Smartphones, especially iPhones, have available applications and features, such as TTY, that make it easier to use and provide increased access to services. However, phone purchase costs can be prohibitive to many low-income individuals. Cost of service plans are another barrier, with no current federal cap on how much carriers can increase fees and rates associated with those plans. More affordable, 'non-smart,' phones often don't have the same accessibility features as more expensive counterparts.

Some providers and programs donate phones to low-income people, but these tend to be older, out-of-date phones that lack the 'smart' element of the newer phones. Furthermore 'non-smart' phones tend to have a limited data plan and therefore hold almost no value for deaf, deaf/blind, hard of hearing and speech impaired communities.

For a person who is deaf, having a limited data plan has reduced usefulness, since some of the best methods to communicate require a lot of data, such as video. Some of these features can be used over Wi-Fi, and in those cases, do not require data, but Wi-Fi can also be prohibitively expensive. Due to these costs, users are often deciding to cancel plans and get Wi-Fi where available. A smart device, either a mobile phone or tablet, can use some features if connected to Wi-Fi but cannot access 911. Among participants there was an interest in finding a way to interact with 911 on a device that was not a phone, and potentially a device that did not require a data plan. For example, being able to use a tablet that did not have a data plan but was connected to wifi to contact 911.

In all instances, affordability was an issue that affected access to 911 services. Outside of the affordability of the technology to access 911, there were additional concerns about the costs and perceived costs of services from the agencies that provide emergency services. Though not directly related to the Strategic Plan, this could influence willingness to call and request help.

Education & Information

In each conversation, issues of education and requests for information about E911 and services arose. It is important to engage the public about the availability of new E911 technology when it becomes available, but it is equally important to continue current efforts to educate the community on when, and how to contact 911.

In 2016, the KC E911 Program Office launched several outreach initiatives to educate King County residents about the how, when and where of calling 911. This outreach included engaging multicultural communities to understand barriers for accessing emergency services. KC Program Office staff also regularly attend community events distribute printed materials for partner

organizations to use in their outreach. Despite this well-developed education and outreach program this equity engagement effort illuminated ways it can be strengthened. An overview of the KC E911 Program Office education and outreach work can be found in **Appendix II**.

There is a General Lack of Understanding of How E911 Works

Questions about how to use and access E911 services were frequent. The sources of information on E911 were inconsistent in most cases. Sources of information were frequently informal, and could lead to misinformation. Requests for basic expectations about what will happen when you call 911 were common. Inaccurate information on 911 can be a barrier to accessing the system. For example, thinking that there is a cost to calling 911 or if calling often will incur charges, led some to think they should not call 911 even if they had a reason to place the call.

The Immigrant and Refugee Community Have Needs for Education

For some immigrant and refugee communities, education on E911 was more than an issue of safety but also one of civic engagement. Many of the participants who had immigrated wanted to know what their individual and community responsibilities were regarding public safety. Knowing how and when to call 911 appropriately is an issue of inclusiveness, participation in the community, and ability to respond accurately in the event of an emergency.

Access to information about E911 was found to be sporadic with many learning about E911 through informal channels over time, from friends or family or when they became involved with a community organization. Participants preferred learning more about the E911 system when entering the United States.

College Campuses are Opportunities for Partnership and Education in E911 System and Services

There are clear opportunities for coordination with local college campuses and their emergency management services to accurately inform students about E911. In some discussions, people felt that there was a lack of readily accessible educational material that could be easily shared. Additional coordination with campus emergency management personnel would provide an avenue for those materials, as well as create a regular channel for communicating changes to the system and technology.

Other Issues & Concerns

There were additional comments and concerns identified that fell outside of the above categories and outside the scope of the Strategic Plan. These issues are important and are captured in this report below as well as in more detail in **Appendix I**. The KC E911 Program Office will share these issues with the appropriate organizations.

Concerns about Police Response were Common

There were multiple concerns that a police response would escalate a bad situation. For domestic disagreements, respondents wanted to ensure that if they called 911, the incident would not go on the police record of their family member — especially if this was their child — and thereby

impact their future opportunities. Not knowing the consequences of police involvement led participants to not want to call 911.

Hard of Hearing, Deaf and Deaf/Blind Students Particularly Concerned with Police Escalation

Hard of hearing, deaf and deaf/blind students often preferred to not call 911 due to concerns for police escalation, feeling police would overreact before realizing the individual could not hear or respond to the dispatched officer. In one case 911 responders were not informed by the operator that the caller was deaf or hard of hearing. Due to this miscommunication, this caller was arrested by the police. Had the call taker informed the responding officer that the caller was deaf, this incident may have turned out differently.

Concerns with Police Interactions on Issues of Immigration Status, Race and Ethnicity

Some community members voiced concerns regarding police or other law enforcement response being biased based on the race and ethnicity of the community. There was a perception that police response was slower for communities of color and that non-white communities were treated differently.

One story involved a young woman having a miscarriage. After being informed of the cost for an ambulance by the 911 call receiver, she chose to drive herself to the hospital. On the way, she was pulled over for speeding, and — while experiencing a miscarriage — the officer had her get out of the car and gave her a ticket.

There is a perception that if this woman had been white, the officer would have escorted her the rest of the way to get the help she needed. Participants suggested that more training be available to address these issues, and that the community members should know how to report matters of inappropriate behavior.

Interpretation and Translation Issues with Other Agencies

Participants voiced some concerns with the quality of other interpretation services at non-King County programs, such as Child Protective Services (CPS) or hospitals, where experiences with translators were not positive. For example, when interacting with CPS, service providers who had knowledge of the community, situational context and possessed the necessary language skills were not permitted to translate for clientele and had to instead use a formal language interpretation service. This caused experiences of delayed response, flaws in the transfer, or differences of dialect. These situations were frustrating for all parties involved, and were often brought up when discussing foreign translation services as a contrast to largely positive experiences with E911.

Some Immigrant Senior Participants Feel Uncomfortable and Unsafe on Transit

Immigrant seniors interviewed felt uncomfortable or unsafe riding public transit. Foreign-born participants described verbal and physical abuse by other passengers, and in two occasions were

harassed for not speaking English, having a Muslim name or appearing to be Muslim. The victims of these racial attacks did not feel that the bus operators responded to these incidents.

RECOMMENDATIONS

Based on the feedback garnered in the community interviews, the Equity Subcommittee identified seven recommendations for the KC E911 Program Office and King County PSAPs to pursue.

1 – IMPLEMENT TEXT TO 911

Issue: The current TTY and sign language translation systems do not consistently ensure members of the Deaf, Hard of Hearing, and Deaf/Blind community can communicate with call receivers effectively.

Recommendations: Implement Text to 911 as soon as feasible. In addition, immediately reach out to and involve the Deaf, Hard of Hearing, and Deaf/Blind community in the planning for Text to 911 to ensure they are fully aware of and able to use the new technology when it is available. Consider piloting Text to 911 with these communities to gather their feedback on functionality before full scale implementation.

2 – ENGAGE THE COMMUNITY TO SEEK ONGOING FEEDBACK ABOUT HOW CURRENT E911 TECHNOLOGIES MEET THEIR NEEDS

Issue: Because E911 technology works for most people, the assumption is that it works for everyone. Feedback through the equity outreach process suggested that there are areas where the technology could better meet people’s needs, such as TTY functionality and Smart911.

Recommendations: The Program Office should build on existing outreach and engagement strategies as listed in **Appendix II** and develop a routine schedule for reaching out to and engaging various communities to evaluate the accessibility and functionality of E911 technologies and services. These communities should include, at a minimum:

- Deaf, Hard of Hearing, and Deaf/Blind community
- Non-English speakers
- Low-income residents
- Youth
- Communities of Color
- Seniors

3 – PARTNER WITH PSAPS TO CONTINUE AND ENHANCE TRAINING FOR CALL TAKERS

Issue: Some participants reported instances where call takers could have provided information to police that would have avoided conflict at the scene.

Recommendations: Partner with the PSAP to continue and enhance training for call takers to meet the specific needs of communities that do not communicate verbally or in English. This training should be informed by engagement with the community to accurately identify their needs based on their experience.²

4 – SUPPORT ACCESS TO PHONE SERVICES FOR LOW-INCOME PEOPLE

Issue: The cost of cell phones and data plans can mean that low-income people do not have a phone and therefore are not able to call 911 in an emergency.

Recommendations: Pursue avenues to increase access to smart cell phones, including opportunities for the KC E911 Program Office to partner with other County agencies and human service providers to distribute smartphones to low-income individuals. In addition, coordinate with and support private and non-profit organizations that advocate on behalf of King County communities to support affordability and accessibility to technology and 911, including working with corporations on caps for data plan costs since the FCC rules that govern those costs are unlikely to change.³

5 – MAINTAIN AND INCREASE EDUCATIONAL OUTREACH

Issues: At every outreach meeting, the CBE staff were asked basic questions about how the E911 system works and how and when it should be used, indicating that many communities lack basic information about E911 and therefore do not use it effectively.

Recommendations:

- a. Continue to build rapport with local advocacy organizations to provide education around E911. For example, explore opportunities to build relationships with and provide educational information to community-based agencies serving immigrants and refugees, particularly when they arrive in the United States.
- b. Build relationships with emergency personnel on college campuses to disseminate information about E911.
- c. Explore leveraging existing programs in the Public Health—Seattle & King County's Emergency Medical Services (EMS) Division to amplify existing education efforts.
- d. Continue partnering with other agencies, such as police and fire, in community education so that the full process of delivering emergency services can be effectively communicated.

² Individual PSAPs currently provide training to call takers on working with deaf, deaf/blind, and hard of hearing callers. The KC E911 Program Office also sponsors a training program for call takers.

³ The cost of data plans is regulated by the Federal Communications Commission and local jurisdictions have no ability to insert cost caps on plans.

6 – PARTNER WITH ORGANIZATIONS THAT INNOVATE SPECIFICALLY FOR COMMUNITIES WITH BARRIERS TO ACCESS

Issue: The KC E911 Program Office is focused on technology provided by the State and County and used at the PSAPs. Other organizations are focused on developing technology to serve communities with specific needs, such as the Deaf, Hard of Hearing, and Deaf/Blind community.

Recommendations: Seek out innovations designed for specific communities and determine if they can be integrated into the E911 system or be used to enhance E911 services. For example, the Technology Access Program at Gallaudet University and Public Safety Solutions at Avaya are organizations that innovate for the Deaf, Hard of Hearing and Deaf/Blind community, such as ways devices like tablets can connect to E911 over Wi-Fi. Learning from their efforts could improve the effectiveness of the E911 system to this community.

7 – SHARE COMMUNITY FEEDBACK WITH OTHER AGENCIES

Issues: The public does not usually distinguish between the E911 system and the larger emergency response system. Every community conversation strayed outside the boundaries of the E911 system as people talked about experiences where they have felt unsafe or where the response they received when calling 911 was not what they expected.

Recommendations: Share the feedback generated by this outreach effort and compiled in **Appendix I** with the relevant County agencies. It is important to acknowledge that these stories were heard and they should be shared with agencies that can address the concerns raised.

APPENDIX I: KING COUNTY E911 PROGRAM OFFICE COORDINATES WITH OUTSIDE AGENCIES TO ADDRESS THESE ISSUES

During outreach and engagement sessions participants provided anecdotal feedback which did not directly correspond to the current scope of the Strategic Plan. Community comments are captured below, along with potential actions and suggested next steps for corresponding agencies and organizations.

1. Community: Non-English Speaking, Low-Income, Communities of Color, Youth

Several participants expressed concerns about how police responded when called and fear that they would escalate a bad situation, as well as perceived differential treatment based on race and ethnicity. In one case, a student called 911 because she was having a miscarriage. The call taker told her that the ambulance would cost \$500. So, she drove herself to the hospital but was pulled over for speeding. The police made her get out of the car and then gave her a ticket while she was having a miscarriage. She is Muslim, and a person of color, and feels that if this had happened to a white woman they would have escorted her.

Many students who were interviewed also said that they might not call 911 in an emergency out of a fear that police could escalate the situation. For deaf students, this was a common theme. Some students recall the specific incident of when a deaf man was shot by police when he didn't respond to their verbal requests.

Potential Action: Consider fostering relationships between law enforcement officers and the community, perhaps through ongoing community roundtable conversations with community groups focusing on police/community relations.

Agency/Organizations: Law Enforcement

2. Community: Non-English Speaking

Some non-English speaking participants mentioned the inconsistency of interpretation and translation services at other government agencies, specifically citing that State's Child Protective Services(CPS) and regional hospitals. In some cases, service providers preferred using translation services over trusted community members. One interview participant described a CPS employee who could not reach an appropriate translation service but refused to use a fluent community member.

Potential Action: Consider evaluating translation and interpretation services and protocols to better meet the need of affected communities.

Agency/Organizations: Department of Social and Health Services- Child Protective Services, Regional Hospital Boards

3. Community: Non-English Speaking, Communities of Color, Seniors

Seniors and specifically non-English speaking seniors reported abuse on Metro buses by other riders and felt that the drivers did not do enough to stop incidents of racial harassment and violence based on race and/or religion. In one case, harassment occurred when a Muslim, non-English speaking, senior of color was physically and verbally abused on a Metro bus and the driver did not intervene.

Equity Outreach and Engagement for the King County Regional E911 Strategic Plan

Potential Action: Consider additional training for Metro bus drivers on dealing with issues of harassment and abuse. Consider convening ongoing conversations with affected community to continue dialogue.

Agency/Organizations: King County Metro

APPENDIX II: CURRENT KING COUNTY E911 PROGRAM OFFICE OUTREACH AND ENGAGEMENT EFFORTS



King County

9-1-1 Public Education Outreach – 2016-2017 Executive Summary

In 2016, the King County E911 Program Office launched several outreach initiatives to educate King County residents about the how, when and where of calling 9-1-1, as well as to create awareness that accidental calls are a major issue in King County. The following executive summary provides a recap of the 2016 campaigns.

2016 Campaigns:

- *Early Education Campaign:* Provided early education to King County's youngest residents to help establish a solid 9-1-1 foundation by creating partnerships with local libraries, and bringing the newly developed storybook, *Emery and the Ice Carnival*, on a county-wide story time tour.
- *Accidental Call Campaign:* Drove awareness that accidental calls are a major issue in King County. A TV ad campaign educated residents that 1 in 5 calls to 9-1-1 are accidental.
- *Multicultural Campaign:* Gained trust with multicultural audiences by forming partnerships with six local community-based organizations, featuring King County's approachable 9-1-1 mascot: Emery the Emergency Penguin.

2017 Planned Outreach:

- **Create an annual reminder to teach your kids about how to call 9-1-1:** April is National 9-1-1 Education Month. Every year, King County will use this month as an annual public reminder on the importance of learning the how, when and where of calling 9-1-1.

Additional Public Education Tactics:

- *Events & Presentations:* In 2016, members of the King County E-911 public education team attended seven presentations and events, ranging from presenting at smaller-scale events such as ESL classes, to larger events that attracted more than 3,000 participants.
- *Printed Materials:* The King County E911 Program Office carries a wide array of printed materials that are distributed at community

WHY IS TEACHING KING COUNTY RESIDENTS ABOUT 9-1-1 IMPORTANT?

More than 5,000 9-1-1 calls are made every day in King County. Only about half of these are for actual emergencies.

- 22% of calls are from people asking for information or calling about a non-emergency.
- 28% of calls are accidental.

The main reasons multicultural audiences don't call 9-1-1 are language barriers, fear and trust issues. Specifically, research told us that:

- 1 in 5 King County residents are from another country with more than 170 languages spoken in our schools.
- A high proportion of Chinese residents are less likely to report incidents when they witness violent crimes.
- The Hispanic/Latino population makes up nearly 10 percent of King County's population.
- Washington has one of the largest Somali communities in the U.S.

APPENDIX II: CURRENT KING COUNTY E911 PROGRAM OFFICE OUTREACH AND ENGAGEMENT EFFORTS



events and available for partner agencies to use in their outreach. In 2016, **54 partner agencies** used these supplies including police and fire departments across King County, schools, public health agencies and PSAPs. The “best seller” among these materials is Emery’s coloring book, which is also available in Spanish and Chinese. In 2016, **32,000 coloring books** were distributed. Materials are also available for parents and caregivers online ([here](#) and [here](#)).

- *Social Media:* King County E-911’s [Facebook page](#) has 3,321 followers.

Early Education Campaign: Emery’s Storybook Tour

To educate children and their families about the how, when and where of calling 9-1-1, a storybook was created based on an idea by a local 9-1-1 dispatcher and her son.

Emery and the Ice Carnival, which was also translated into Spanish (*Emery y el Carnaval de Hielo*), went on a county-wide library tour in April to celebrate National 9-1-1 Education Month. At each story time, the book was read by a local first responder, who worked with the children’s librarians to also engage the children in 9-1-1 activities, such as practicing to dial 9-1-1 on a phone pad and singing [Emery’s 9-1-1 Emergency Song](#). The song had specifically been produced for this campaign to help children remember what to do in an emergency.

To ensure the success of the campaign, the E-911 team formed partnerships with a number of organizations, including:

- **The Seattle Public Library & King County Library Systems:** 13 libraries across King County hosted an Emery the Emergency Penguin story time event, including one story time in Spanish.
- **Woodland Park Zoo:** Provided a place to host the launch event and helped facilitate the logistics of the media event.
- **Seattle Police Department, Des Moines Police Department, Seattle Fire Department, Washington State Patrol and Snohomish County E-911 and others:** King County E-911 collaborated with public educators from these organizations to ensure the storybook message represented all first responders in King County.



APPENDIX II: CURRENT KING COUNTY E911 PROGRAM OFFICE OUTREACH AND ENGAGEMENT EFFORTS



Campaign Results

- More than **530 preschoolers** attended either the launch event or one of the **13 library story times**. The story times were also popular among the children's librarians, who left feedback such as, *"This message is so important! I'd love to host another 9-1-1 story time."*
- The campaign attracted immense interest from the media, including Spanish-language outlets, landing **16 stories** in print and online outlets, and garnered coverage on **eight radio and TV stations**, generating a total of **6,587,792 impressions**.



In addition, the campaign is a finalist for two awards at the [2017 PRSA Puget Sound Totem Awards](#).

Accidental Call Campaign

To make King County residents aware that accidental calls can block true emergency calls, a robust TV and digital ad campaign was launched during the 2016 Rio Olympics, and continued through December 2016.

Two TV ads were produced, focusing on two common scenarios of accidental calls:

- Pocket dials ([see ad here](#)).
- Kids playing with phones ([see ad here](#)).

Campaign Results

Hardwick Research conducted a post-campaign ad research study with a random sample of 400 King County residents. The results showed that the campaign was successful and that the message was clear:

- The advertising campaign raised awareness by making respondents more likely to know that accidentally dialed 9-1-1 calls are an issue in King County (28% pre, 34% post).
- There was a nine-point increase in ad recall, as 15% of post-campaign participants recalled the advertising, as opposed to 6% in pre-campaign research.
- Of those who recalled an ad regarding accidental calls to 9-1-1:
 - 44% learned to avoid accidental 9-1-1 calls
 - 42% indicated the ad told them to avoid making accidental calls to 9-1-1
 - 27% plan to ensure their phones are not the sources of unintentional 9-1-1 calls.

APPENDIX II: CURRENT KING COUNTY E911 PROGRAM OFFICE OUTREACH AND ENGAGEMENT EFFORTS



Multicultural Campaign: Engaging Diverse Audiences

Many people hesitate to call 9-1-1 because they are unaware of how 9-1-1 works, or may be afraid. This is especially true for multicultural audiences. To make 9-1-1 more accessible and inclusive, King County formed partnerships with community-based organizations to create *Emery's 9-1-1 All Stars Program*. These CBOs included Southwest Youth & Family Services, El Centro de la Raza, Chinese Information and Service Center, Somali Youth & Family Club, Neighborhood House and Somali Health Board.

King County worked closely with representatives from these organizations to transcreate the class materials into Chinese, Somali and Spanish. Emery's 9-1-1 All Stars Program offered the community-based organizations an interactive class featuring fun activities such as coloring, word search, quizzes and games.

In-language media partnerships further educated diverse audiences about 9-1-1 by highlighting a student from each class as *9-1-1 All Star*. Partnerships were formed with the following community-based media organizations: Runta News (Somali community), Univision Seattle and La Raza del Noroeste (Spanish-speaking community), Chinese Seattle Post (Chinese-speaking community), Northwest Asian Weekly (English-speaking Asian community), and KING 5, Parent Map and Tukwila Reporter (English-speaking communities).

View a recap video of the program [here](#).

Campaign Results

- **227 students** from diverse backgrounds participated in **12 classes** around Seattle and King County.



APPENDIX II: CURRENT KING COUNTY E911 PROGRAM OFFICE OUTREACH AND ENGAGEMENT EFFORTS



- **More than 4.9 million** impressions were generated from paid and earned media coverage of the program in English, Spanish, Chinese and Somali.
- Due to the success of the campaign, King County was invited to present at the Pacific Northwest Social Marketing Association's **fourth annual SPARKS conference** in December, at which nearly **170 attendees** learned best practices from experts in the social marketing field.

In addition, the campaign is a finalist for an award at the [2017 PRSA Puget Sound Totem Awards](#).



F- FINANCE TASK FORCE RECOMMENDATIONS REPORT



King County

E-911 Strategic Plan: Finance Task Force Recommendations

Executive Summary

Introduction and Summary of Key Recommendations

The Finance Task Force is pleased to submit its recommendations for the King County E911 Strategic Plan. The E911 Finance Task Force was convened in August 2016 and charged with the research, deliberation, and recommendation of a 10-year Sustainable Financial Plan for the Regional E911 System. The E911 Program Office is making real-time improvements to the E911 accounting, operating and financial planning procedures. Further, they have made significant progress on the Task Force's Guiding Principles adopted by the Leadership Group in June 2017. The findings in this report are the result of this collaborative and transparent effort by King County, Program Office, and PSAP representation on the Task Force.

The E911 Program and Region System is at a critical crossroads and the Task Force believes significant policy, operational, and financial actions are needed immediately to place the program and its services on the path towards fiscal sustainability. These actions will be difficult and complex – likely requiring several years of phasing by the Program Office and PSAPs. However, these actions must be thoughtful and coordinated in order to protect the integrity of the 911 service to King County residents.

Therefore, the Task Force believes that Program Office should continue to work with IAG (e.g. E911 Program Office staff and PSAP representatives knowledgeable about operational, technical and financial aspects of the system) to collaboratively develop a 2019-2020 Budget proposal that includes recommended expenditure reductions. This tight level of collaboration is necessary to tie reductions of expenditures to the operational effectiveness of the system. It must do so while also evaluating additional revenue options as described in this report. The Task Force has developed a planning-level financial model for analyzing future revenue and expenditure conditions in the E911 Program. The Task Force recommends that this tool be used to support the work above.

After 12 months of meetings, research, and discussion, the Finance Task Force submits the following set of considerations and recommendations to the Planning Group for review and discussion. In developing a path to a 10-year Sustainable Financial Plan, the Finance Task Force makes the following set of findings:

1. The E911 system consists of a system of communication networks, equipment, and people delivering services for 911 operability. The program spends significant resources on technology and equipment, as well as services to maintain and operate them. The system is geographically dispersed across the County.
2. The E911 system is operationally and technologically complex. The mix of equipment and services are delivered via contracts with vendors, by the Program Office, and by PSAPs themselves. Investing and maintaining the system has been a regional partnership, backed with financial resources from the E911 Excise Tax and from the local governments.

3. The total cost of the system has grown faster than the available excise tax revenues. The true growth in the cost of the system has been masked by budget carryovers due to delayed capital projects, the one-time bump in the excise tax rate in 2011, and past practices regarding the budgeting of services and equipment investments.
4. The E911 tax is levied based on a per line fee and the tax is not sufficient to sustain the E-911 system in the long-term. The E911 excise tax base has not grown – remaining essentially flat over the past several years. The rate at which households are abandoning their wired lines suggest that there will be no nominal growth in revenue from the tax. The implication is that the real (inflation-adjusted) value of the revenue is declining over time meaning there is fewer resources to pay for the same level of services.
5. The E911 system is facing a forecasted \$70 million cumulative budget deficit over the next ten years. Current system operating practices are projected to cost \$300 million from 2017-2026 while the excise tax is projected to raise \$230 million in revenue during that same time. While there is currently \$27 million in fund balance, projected spending on a new system architecture and current operating practices are not sustainable at current revenue levels. Continuation of the status quo is projected to erode the available fund balance and produce budget deficits starting in 2023.
6. Capital investment is needed to assure compliance with national 911 standards to allow for use of the State ESINetII and NG911 technologies. The Technology and Operations Task Force studied multiple system architectures that could meet future requirements of the E911 regional system. Two architectures – the Distributed Architecture and the Single Platform architecture were presented to the Planning Group and the Leadership Group with the Leadership Group voting to move forward with the Platform system.
7. The coming deployment of the State’s ESINetII and a new system architecture will mean the nature and level of work necessary to maintain the system will be different from today, including changes in network contracts, vendor contracts, and personnel needed to maintain the system.
8. There are a number of financial practices and policies that have been or will be implemented during the strategic planning time horizon. These practices and policies will demonstrate financial accountability, and will allow for better coordination between the Program Office and the PSAP’s.

The Finance Task Force believes that there are two critical areas that must be addressed by the E911 Governing structure in the year ahead.

First, the Program Office and PSAPs must fundamentally operate the E911 system in a more cost-effective manner.

The operational and provider complexity and coming technology changes of the system presents both a challenge and opportunity for delivering cost-effective services. The E911 systems spends roughly 57% of its expenditures on operations and maintenance service delivered by vendors, the Program Office, and PSAPs. Finding a set of cost-effective solutions must balance the impacts between the Program Office and PSAPs, acknowledging that changes to service delivery and levels of service will be difficult to absorb by both parties while maintaining the operability of the

system. There are some near term expenditure reductions that can provide some breathing room before future budget deficits occur. This will also allow time for the development and implementation of a workable revenue strategy to fund the system in the longer term.

The recommendations include work in the following four key areas:

- Capture any potential savings to network, security, and vendor contracts presented by the deployment of ESINetII and a new system architecture.
- Develop the most operationally efficient staffing levels for excise tax funded FTEs at both the Program Office and PSAPs to deliver and maintain the technology side of the system.
- Define E911 service responsibilities and funding of PSAPs to consistently specify: 1) which E911 services they will deliver; 2) what levels of service are suitable for the system; and, 3) what level of revenue support is commensurate with those responsibilities.
- Continue to improve financial policies, processes and transparency.

Second, revenue reforms are needed since the excise tax is not kept pace with inflation or needed expenses in the E911 system.

The King County E911 System faces a structural issue related to the adequacy of funding. Demonstrating that the most cost-efficient and accountable spending is in place is important to make the case that new revenues are needed. Revenue has not increased since the excise tax increase in 2011. It is clear to the Task Force that the tax base and tax policy that supports program revenues have not kept pace with inflation, much less the cost of labor and technology resulting in the real decline in purchasing power of the excise tax (for a given dollar, the excise tax buys less today than it did in the past).

The Task Force believes its recommendations for expenditure reductions will help prove that issue out. Work needs to begin immediately to deliver options to the King County Council to find a more adequate, resilient tax base to support the nature of this public safety system. The purchasing power of the tax revenue is declining in real terms (inflation adjusted).

The recommendations include work in the following key areas:

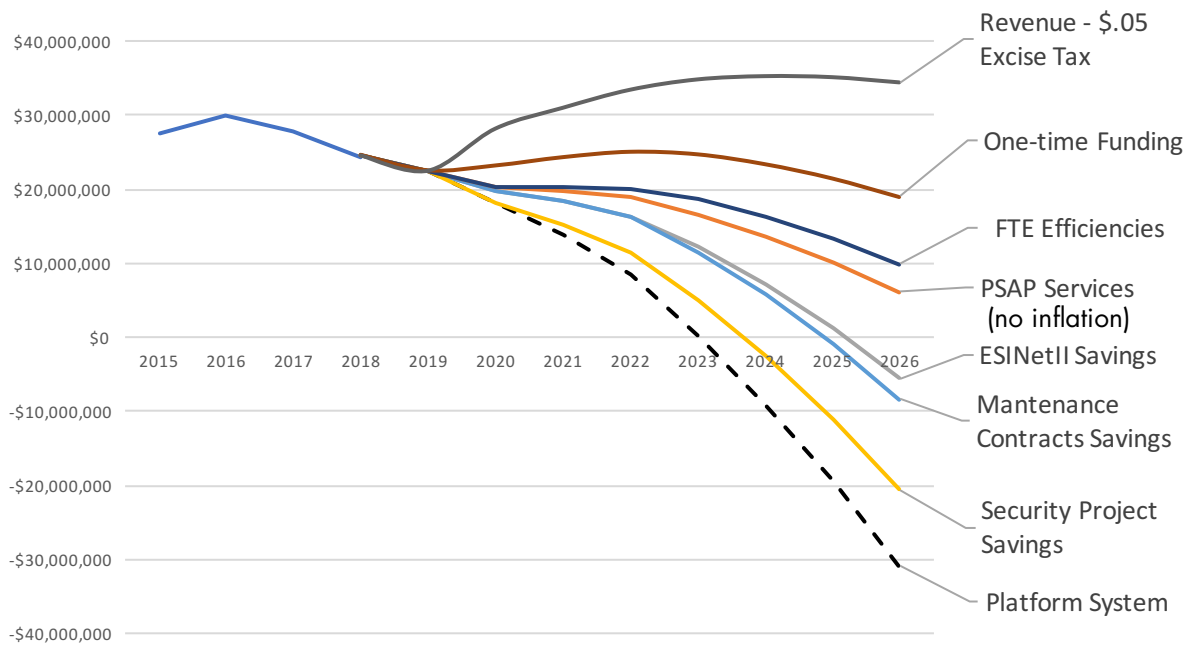
- Find options for funding one-time technology upgrades to the system. This should include consideration of PSAP escrow fund balances and other non-excise tax sources from the federal, state, county, and local sources to supplement available E911 fund balance.
- Find reforms to the existing excise tax that are more adequate and resilient for the needs of the E911 system and has the ability to grow commensurate with normal inflation and system demand.

Summary of Recommendations

The following exhibit is a graphic display of the summary of Finance Task Force recommendations to pursue both cost-saving and revenue reforms. The chart shows illustrative impacts of “best-case” implementation of the recommendations discussed in the report and the resulting impact on the Program Office’s beginning fund balance. The lines show the incremental effect of each action in

addition to the one below it (in other words, all actions would need to be taken to achieve the top line beginning fund balance of "Revenue - \$0.05 Excise Tax).

Exhibit 1: Summary of Beginning Fund Balance Impacts of Potential Operational and Revenue Reforms (2017-2026)



The authorizing ordinance called for a 10-year sustainable financial plan. The Finance Task Force has conducted detailed analysis of the E911 Program Office's financial position and has determined that the fund will have a positive balance until 2023 including all current expenditures and implementation of the proposed technology platform. Beyond 2023, the Finance Task Force identified a series of actions that can, or may, improve the long term financial sustainability of the E911 Regional System.

Some of the actions are dependent on information and decisions that cannot be accurately quantified at this time. For example, any savings that may result from the implementation of the State's ESINetII are not known since the State is only partially through this project. Therefore, the recommended implementation of a sustainable financial plan will rely on the outcomes of major milestones that will occur over the next two to five years as both network and technology deployment occurs. As each milestone is reached, the outcome should be reflected in the financial model created by the Task Force and the resulting positive or negative impact recorded. Those outcomes will inform next steps.

For example, if the E911 regional system is not able to gain approval of excise tax reform, local options will be necessitated. If the revenue is secured at some reduced level, that outcome will need to be reflected in the financial model and appropriate steps will need to be taken to compensate for that outcome.

The ten-year financial forecast cannot be responsibly “balanced” now because the long-term impacts on the E911 regional system will change as the unknown variables around technology upgrades become clear. As a practical matter, local government budgets are balanced on an annual or biennial basis. Financial forecasts are used to inform near term decisions that have longer term implications.

While the Finance Task Force has identified actions that could result in a positive fund balance at the end of ten years, we believe that a collaborative process involving all stakeholders is needed to make thoughtful and informed financial decisions.

The Task Force recommends focusing in the following areas. As stated earlier. There is a projected cumulative forecasted budget deficit of \$70 million over the period of 2017-2026. The exhibit below shows the potential magnitude of measures that should be considered by the E911 governing entity.

Exhibit 2: Summary Spending and Potential Operational and Revenue Reforms (2017-2026)

2017-2026 Forecasted Deficit		\$70,260,000	\$70,260,000
Potential Areas of Savings		Low End	High End
Contract - ESINetII	\$40,350,000	\$0	\$10,340,000
Contract - Vendor Maintenance	\$22,560,000	\$0	\$2,880,000
Contract - Security	\$13,100,000	\$0	\$12,170,000
Operations and Maintenance FTE	\$56,370,000	\$3,740,000	n/a
Other PSAP E911 Services	\$118,440,000	\$0	\$11,670,000
Remaining Forecasted Deficit	\$187,900,000	\$66,520,000	\$33,200,000
Potential Areas of Revenues		Low End	High End
One-time Funding Options		\$0	\$7,340,000
New Revenue Solution		\$66,520,000	\$25,860,000
Remaining Forecasted Deficit		\$0	\$0

Recommendation: Capture any potential savings to network, security, and vendor contracts presented by the deployment of ESINetII and a new system architecture.

Network and equipment costs represent a significant amount of annual operating expenditures for the E911 Program Office. Planning and analysis of system requirements for the upgrade in the next 2 years must set targets for addressing possible cost-savings including the potential for cost-savings following the full deployment of ESINetII.

- The Program Office must scrutinize the planned annual expenditure of approximately \$1.4 million which is most likely related to State trunking fees currently paid by the Program Office. At this time, it is unknown whether or not the state will require local jurisdictions to continue payment once ESINetII has been deployed or whether it will become the responsibility of the State. The State caps its subsidy of these payments to King County and the Program Office is working to evaluate any potential savings given these issues.

Currently, the state deploys ESINetII statewide between April 2018 – February 2019 and King County goes live between July – December 2018.

- The low-end savings from this measure could be \$0 over 10 years.
 - The best-savings from this measure could be \$10.3 million over 10 years.
- Evaluate potential cost-savings from new maintenance contracts associated with the deployment of a new system architecture. The Program Office currently spends about \$1.18M a year for hardware and software maintenance costs. In the short-term, they will have to stand up both systems but in the long-run, there may be some cost savings.
 - The low-end savings from this measure could be \$0 over 10 years.
 - The best-savings from this measure could be \$2.8 million over 10 years.
- Evaluate the potential for cost-savings from potentially redundant security improvements. The Program Office is working on a plan to evaluate the security needs of a new system architecture.
 - The low-end savings from this measure could be \$0 over 10 years.
 - The best-savings from this measure could be \$12.1 million over 10 years.

Recommendation: Create a cost-efficient and operationally sound staffing model for deploying and maintaining E911 equipment and software.

Deployment and maintenance of the new platform system could require 3-5 additional FTEs on an operational basis. There are currently 11 FTEs and 2 dedicated Project Managers from the KCIT PMO (Program Management Office) — 3 of whom provide technical services from the Program Office for the regional system, 2 that provide technical solutions for location and address mapping (GIS/MSAG). There are an additional 23 excise tax-supported FTEs in the PSAPs, for a total of 36 FTEs across the system. If some of the FTEs that are now in the PSAPs could be redeployed to help with the new system architecture and thus maintain the current FTE load, it could save approximately \$3.7 million over the 10 years (this would be the cost of 3-5 fewer FTEs in the system). The E911 Program Office and KCIT will need to assess the skill sets of PSAP technical staff and provide supplementary training as needed.

- The low-end savings from this measure could be \$3.7 over 10 years.
- The best-savings from this measure could be higher over 10 years if more a more efficient staffing model can be achieved with the platform architecture.

Recommendation: Define E911 service responsibilities and funding of PSAPs to consistently specify: 1) which E911 services they will deliver; 2) what levels of service are suitable for the system; and, 3) what level of revenue support is commensurate with those responsibilities.

Program Office and PSAPs must work immediately on finding an affordable, fair, and appropriate level of PSAP funding that accounts for the delivery of E911 services but also places the Program Office on the path toward fiscal sustainability. Changes can be made and phased as needed, minimizing the level of disruption in the system. If PSAP-delivered E911 expenditures remain at roughly 44% of Program Office expenditures, they will consume a greater and greater share of overall excise tax revenue, rising from 48% in 2015 to a forecasted level of 67% by 2026 due to stagnant revenue performance.

As such, this level of service delivery is unsustainable. The task force believes that services provided by PSAPs should specify: 1) which E911 services they will deliver; 2) what levels of service are suitable for the system; and, 3) what level of revenue support is commensurate with those responsibilities. The Task Force has not arrived at an answer to those questions since they must be addressed by both Program Office and PSAP leadership and operations staff. A reduction in the current level of PSAP funding would represent some fiscal challenges for PSAPs given their reliance on membership fees to support their services. Any reduction in PSAP distributions will need to be based on an agreed-upon formula that considers proportionality, as well as the vision for efficient use of public resources and the effective deployment of evolving technology, across the system. Factors such as call volume, population served and support provided by PSAP's for the regional system could also be considered.

- For illustrative purposes, addressing these issues by keeping expenditures at current nominal levels would produce some costs-savings of approximately \$11.6 million over 10 years.

Recommendation: Find options for funding one-time technology upgrades to the system.

Given the challenges of funding the E911 system, the Program Office and PSAPs should explore using future one-time funding sources for technology system upgrades. This should include consideration of PSAP escrow fund balances, E911 fund balance and other non-excite tax sources from the federal (grants), state, county, and local sources. We recommend they be evaluated as part of a one-time capital funding strategy for system upgrades. Over the past three years, end-of-year escrow balances averaged approximately \$9.9 million. Additional work needs to be completed to better understand why individual PSAPs have carried balances and to assess how changes to escrow fund policies impact PSAP cash-flow issues. Based on this analysis, the Program Office and PSAPs can evaluate how much fund balance might be available for capital investments. The Program Office should explore other capital funding sources from federal, state, county, and local agencies.

- For illustrative purposes, finding one-time sources of revenue could fund the estimated initial cost of the platform architecture of \$7.4 million over 10 years.

Recommendation: Find reforms to the existing excise tax that are more adequate and resilient for the needs of the E911 system.

Working with statewide partners to reform the E911 tax base and/or tax policy could put in place a revenue mechanism that better matches the costs of the program services. The Task Force urges that all options, including changes to levy amounts of the current excise tax, levying a consumption tax on telecommunications, considering a ballot measure for use of the public safety sales tax measure, or other property tax based mechanisms be explored as part of this process.

- For illustrative purposes, creating capacity for another \$0.05 in excise taxing authority would raise \$15.3 million over 10 years – raising it \$0.15 in excise taxing authority would raise \$46 million over 10 years.

Recommendation: Continue to create a set of defined financial policies and procedures.

Creating a set of defined financial policies and procedures that would lead to better budgeting, accounting, and accountability is essential. During the Strategic Planning process the Program Office has worked with PSAPs through the IAG to address many of these issues and these efforts have been appreciated on all accounts. Completed measures are noted below to provide a comprehensive record of changes within the Program Office.

It should be noted that IAG policies and Task Force recommendations set forth a work program in these areas without expressly setting elements such as caps on reimbursements or requirements for PSAP financial planning of escrow fund balances. Each recommendation represents an action that could be taken with concurrence of the PSAP's and the E911 Program Office on specific amounts and how they will be proportionally distributed considering the support for the efficient use of public resources and the effective deployment of evolving technology across the system. The process has been collaborative and productive, and the Task Force hopes that the work should continue going forward. These should include:

- **Creating a set of comprehensive E911 Financial Management policies.** These policies should be tailored to fit the uniqueness of the Program Office's operations. As a starting point, they can be adapted from the King County Comprehensive Financial Management Policies and tailored to fit the Program Office's needs.
- **Creating separate operating and capital budgets.** The Program Office has improved financial transparency by creating a capital budget to separate operating and capital costs in order to better plan for ongoing costs. This recommendation has been implemented in King County Code and completed by the Program Office.
- **Including project management staff as part of capital projects.** Project management and subject matter labor costs should continue to be included in the cost of projects in the capital budget. These positions will likely be time-limited expenses.
- **Creating reserve accounts to fully fund future equipment replacement and capital investments.** The capital budget should be fully funded through the use of reserve or sinking funds.
- **Creating better oversight of the implementation of capital projects.** The Program Office has taken steps to improve financial transparency by collaborating with the KCIT Program Management Office which provide Project Management, Finance, and Business Analysis personnel planning and oversight for project implementation and costs.
- **Revising PSAP Escrow Policies to ensure a clear understanding between the Program Office and the PSAP's regarding eligible expenses.** The Program Office is collaborating with the IAG to revise escrow policies so that reimbursement eligibility is clear; the review and payment process is streamlined and efficient; policies are comprehensive and provide clear guidance on expectations; and requirements are clear for both the Program Office and PSAPs. The Program Office and the IAG are continuing this work and hope to develop a work plan for implementation by the end of 2017. Reimbursements are typically made within 30-60 days and going forward in 2018 escrow reimbursements will be made quarterly

- **Working with PSAPs through the IAG to develop a comprehensive escrow program and policies that govern reimbursements and increase accountability.** Additional work is needed to develop PSAP-level expense programs that result in more predictable spending so that expenses can be prioritized and demonstrate accountability towards supporting the E911 regional system. The IAG is currently working on specific policies for:
 - **Maximum salary reimbursement levels for FTEs.** Cap the amount of salary and benefits eligible for reimbursement for supported positions at the PSAPs based upon the body of work required to support the regional system. There is a wide variation of program reimbursable FTE costs.
 - **Escrow fund balances.** Some escrow funds have carried large fund balances. Creating policies for the amount and nature of the fund balances will help PSAPs in their own financial planning. The IAG is currently discussing this issue.
 - **Combining the equipment and general revenue distinction into one category.** The deployment of ESINetII and system architecture may change the equipment needs of PSAPs that should be reflected in the escrow policy. The move to more cloud based systems and software may mean that less hardware is needed at PSAPs.
 - **Working with PSAPs to determine an agreed-upon basis for allocating tax revenue.** The Program Office has accepted the recommendation of the IAG to use *a 2-year average of PSAP 911 call volume* as the measure for escrow fund distribution. The Program Office intends to implement this change in 2020.
- **Engaging the state in tax revenue audits.** The Program Office should work with the State Department of Revenue to audit the compliance rate of phone line reporting.
- **Creating comprehensive and transparent annual financial reporting documentation and performance metrics.** These metrics can be folded into a high-level dashboard presentation of key financial indicators for decision-makers.

Recommended Implementation Timeline

Developing financial sustainability must necessarily be a collaborative effort between the E911 Program Office and PSAP's. While a revenue solution is recommended, it will require either State Legislative action or a locally-voted tax measure – neither of which are simple or certain. Immediate expenditure reductions are needed along with careful future planning that emphasizes cost-effective technology investments and judicious consideration of new technologies that enhance services.

2018	<p>Complete analysis of escrow balances.</p> <p>Complete revision of E911 PSAP revenue distribution formula.</p>
-------------	--

	Continue to work with IAG and (e.g. E911 Program Office staff and PSAP representatives) to collaboratively develop a 2019-2020 Budget proposal that includes recommended expenditure reductions (and then with soon to be formed Governance entity).
2019	Implement spending reductions at E911 Office and PSAP's Complete revenue options analysis and present to King County Council Identify sufficient one-time funding sources to fund implementation of the system architecture update
2020	Identify and implement savings associated with deployment of ESINetII Pursue revenue option with State Legislature and/or local measures Implement new escrow distribution formula Renegotiate vendor contracts for network access
2021	Implement revenue option if approved Identify amount of further expenditure reductions needed to prevent a deficit position in 2023
2022	Implement expenditure reductions if needed
2023-2026	Sustain levels of spending of new technology and operations model against available revenues.

TABLE OF CONTENTS

Executive Summary 1

TABLE OF CONTENTS 11

Introduction 12

Summary of Key Findings..... 16

E911 Financial Sustainability Plan..... 25

Implementation Plan 39

Introduction

The Finance Task Force presents a set of considerations and recommendations for discussion to both the Planning and Leadership Groups for the King County E911 Strategic Plan. The Finance Task Force is charged with the research, deliberation, and recommendation of a 10-year Sustainable Financial Plan for the Regional E911 System. The E911 Strategic Plan Scoping Process required that the Task Force address the following set of questions during the strategic planning process. The Regional E911 Scoping Committee identified a number of strategic questions, including:

- What are the procedures and processes for forecasting, reporting, auditing, and operations related to King County Regional E911 System revenue and expenditures?
- What are the funding needs and revenue strategies for the King County Regional E911 System, including NG911 upgrades and keeping the system up to date over time?
- What are the stakeholder reporting requirements related to the King County Regional E911 System finances, including revenue, expenditures, efficiency, and effectiveness?
- What are the investment management policies for the King County Regional E911 System related to forecasting, investments, reserves, and contingencies?

The Task Force believes the work covered over the past year has substantively addressed many of these questions and that the recommendations contained within this report respond to the central financial and accountability issues raised during the scoping process.

The Task Force consists of 12 individuals nominated by the Planning Group. The members and their representation are listed below:

- Marilynne Beard, Co-Chair, Sound Cities
- Tom Koney, Co-Chair, King County E-911 Program Office
- Tatyana Bogush-Stakhov, ValleyCom
- Krystal Hackmeister, City of Bellevue
- Jason King, King County Sheriff's Office
- Tim Osgood, Fire Commissioners
- Tom Goff, King County Council
- Jennifer Devore, City of Seattle Council
- Kate Davis, King County Executive Office
- Tom Walsh, City of Seattle PSAP
- Tara Murker, UW, Small PSAPs

The Task Force met eleven times since August 2016. The members engaged in a work program designed to gain a shared understanding of the current financial management issues within the Program Office, identify key issues and problems, suggest potential remedies, and put forward potential recommendations for the future funding of the E911 Financial Plan. Over that period, the

group has reviewed relevant financial documentation, completed original research, and held discussions covering:

- The existing financial conditions and policies within the E911 Program Office
- Research into other E911 program practices within the state of Washington and across the country
- Program fund balances, operation budgets, capital projects, and PSAP escrow accounts.
- Research on how PSAPs use E911 transferred funds
- Financial modeling examining the impact of alternative expenditures and revenue arrangements

Further, the Task Force worked with the Technology and Operations Task Force on understanding current operational requirements, options for future system architectures, and cost-estimating. We understand these costs to be of strong quality given the planning level circumstances that they are derived from; however, some variance is to be expected going forward once better planning and analysis is completed and fuller accounting of costs can be produced.

1 Guiding Principles and Sustainability Objectives

In consideration of the Strategic Finance Questions above, the Finance Task Force developed a set of guiding principles to support its inquiry and research. These guiding principles will ultimately support a 10-year Sustainable financial plan that:

- Is clear, understandable, and transparent.
- Supports agreed-to system responsibilities of stakeholders that will include the E911 Office, King County, the PSAP's and their sponsoring agencies.
- Includes a mechanism to provide accountability for all expenditures articulated through financial management policies, timely reporting, and audits.
- Incorporates a measure of flexibility to accommodate evolving system needs and changes in resources.

The following three principles come from the E911 Strategic Plan scoping document and represent guidance set forth for this effort from the plan's sponsors.

- Fiscal Responsibility – equitable, transparent, and responsible fiscal management
- Financial Sustainability – manage toward long-term financial sustainability
- Cost Effective – leverage resources to provide the best possible services

The Finance Task force accepts the key principles from scoping and has further refined them based on their discussions. The following summary of the Finance Task Force Principles includes a working definition of the principle and list of key objectives for each principle.

Principle #1: The Fiscal Responsibility Principle

The system must rely on clearly articulated financial management policies that reflect responsible stewardship of E911 resources, and ensure that they are used for their intended purposes. We

must be open and transparent about all the E911 finances, making financial information available to all stakeholders, and build trust and collaboration among partners.

Representative Objectives:

- Employ budget, financial, and accounting policies and procedures that are coordinated, coherent, and consistent across all levels of the system, primarily King County and the PSAPs.
- Achieve fair and consistent allocation of resources to the entire system (e.g. King County and PSAPs) that support E911 system functionality and is based on an agreed-upon formula (consistent with the governance process).
- Program Office and PSAPs provide clear, accurate, and timely financial reports to inform the key stages of policy formulation, budgeting, implementation, and review.
- Program Office and PSAPs Provide objective performance information to show that the system's efforts are becoming more efficient, effective, and accountable.

Principle #2: Fiscal Sustainability Principle

The Fiscal Sustainability Principle – The E911 system should make effective and efficient use of resources, achieve E911 objectives, fulfill commitments to stakeholders, and prepare for long-term fiscal sustainability. Financial sustainability of E911 revenues is important to the services delivered by both the King County Program Office and PSAPs.

Representative Objectives:

- Employ budget approaches that lead to structurally sound fiscal decisions that support the capital and operational needs/objectives of the E911 system. This includes addressing both expenditure and revenue needs.
- Maintain distinct capital and operating budgets.
- Prioritize funding on investment and operation in the regional system before other eligible E911 expenses that expand services.
- Assure that appropriate budget measures are in place to fund expected investments and unexpected events, including sufficient reserves for equipment replacement, operating expenditures, and capital investment.

Principle #3: The Cost-Effective Principle

The Cost-Effective Principle – The E911 system should invest and spend available resources in building and operating a more efficient E911 system. Investments in the E911 system need to be effective and reinforce broader program goals including no response lost, prompt response, meet or exceed industry standards equity, security, resiliency and survivability.

Representative Objectives:

- Identify basic levels of service for defined deliverables to achieve predictable staffing levels at King County and PSAPs.

King County Regional E-911 Strategic Plan

- Define and advocate for favorable terms for procured third-party contracts for network and technology services.
- Assure that budget and expenditure planning reflect understanding of total cost of ownership across the system.
- Assure consistent and efficient use of E911 resources throughout the regional system including funds allocated to the PSAPs.

The E911 Program Office, the PSAP's, King County and PSAP subscribers have a shared responsibility in identifying and implementing actions to achieve these principles.

Summary of Key Findings

The Finance Task Force makes the following findings to support its recommendations to the Planning and Leadership Groups. These findings are covered in the section below.

E911 service relies on geographically dispersed activities delivered by the Program Office PSAP, and contract vendors.

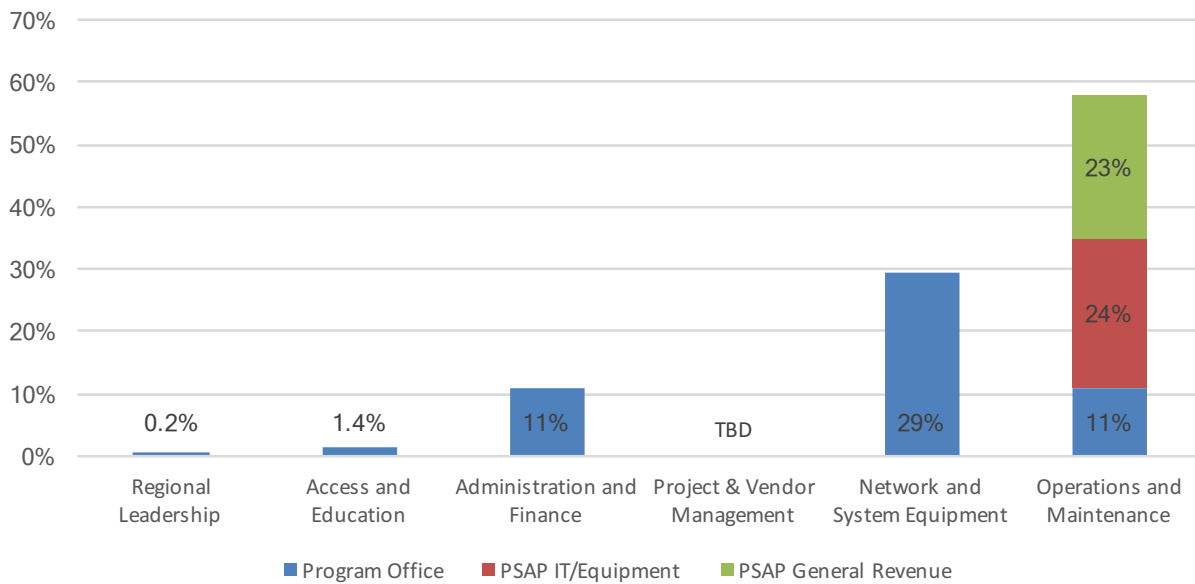
The E911 system consists of a system of communication networks, equipment, and people delivering services for 911 operability. The program spends significant resources on technology and equipment, as well as services to maintain and operate them. The system is geographically dispersed across the County. The E911 system is operationally complex. The mix of equipment and services are delivered via contracts with vendors, by the Program Office, and by PSAPs themselves. Investing and maintaining the system has been a regional partnership, backed with financial resources from the E911 Excise Tax and from the local governments.

The regional E911 System has six core activities described below.

- **Regional Leadership:** These activities include work with local, state, and national associations and committees; and legislative efforts regarding new technology and other professional issues.
- **Program Oversight and Administration:** This includes activities associated with program, vendor and asset management; development of policies and procedures; and staffing related to data analysis, communications, budget, finance, and strategic planning.
- **System Access and Education:** This includes work that expands system access and appropriate uses, such as social marketing strategies, education campaigns, events, training and materials, and language interpretation services.
- **Project and Vendor Management:** These activities include work related to project-specific planning, budget and management, vendor delivery oversight, and compliance.
- **Network System and Equipment:** These project and procurement activities support call delivery from the State 911 network to PSAPs, E-911 phone maps, location data, GIS data, local network, security, and trunking.
- **Operations and Maintenance:** This includes ongoing support for hardware needed for the network, security, and telephone equipment; asset tracking; software licensing, updates, upgrades and fixes, and vendor and PSAP coordination; E911 revenue distribution for PSAP technical staff; and PSAP operations and equipment.

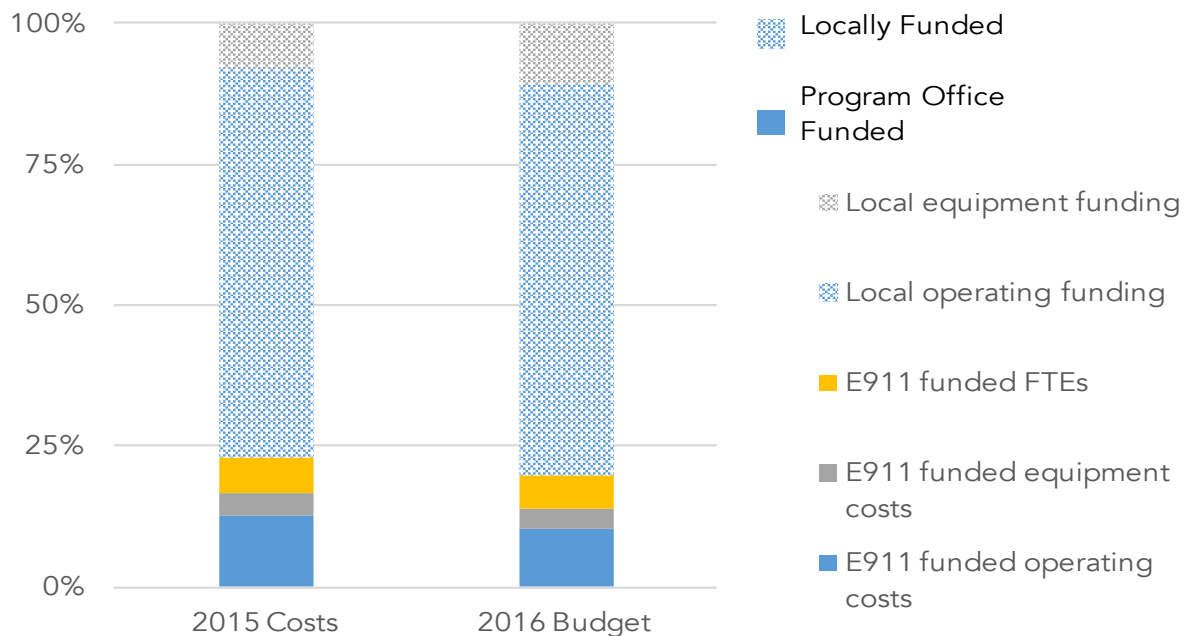
The Exhibit below shows that the E911 excise tax supports E911 related services and technology delivered by both the King County E911 Program Office and PSAPs. Nearly 90% of program expenditures are in the Network System and Equipment and Operations and Maintenance categories. Within those activities, nearly 47% of the E911 services are delivered by the PSAPs and paid for via transfers to their escrow accounts for eligible reimbursements of IT/GIS employees, equipment, and other activities (primarily those related to call taking). As of this time, no break out for expenses related to Project and Vendor Management activities is available. These costs are shown borne primarily in the Network System and Equipment and Operations and Maintenance categories.

Exhibit 3: E911 expenditures as percent of program activities (2016)



Further, E911 excise revenue is an important source of funding for PSAP operations and it has been historically the only source of funding for the E911 PO. Region-wide, the revenues distributed by the Program Office account for approximately 20% of the overall funding for PSAP expenditures as shown in the Exhibit below. These distributed revenues support the operation and maintenance of the regional E911 system.

Exhibit 4: Comparison of Local and Program Funded Activities at PSAPs



The E911 system is facing a forecasted \$70 million cumulative budget deficit over the next ten years.

Based on current spending levels and assuming normal inflation, expenditures will outpace revenue by approximately 30% per year, steadily depleting the E911 available fund balance. Eventually, this will result in a deficit spending position. Moreover, needed capital investments will require an infusion of resources to purchase and implement the updated system architecture to meet the goals of the strategic plan charter.

Current system operating practices are projected to cost \$300 million from 2017-2026 while the excise tax is projected to raise \$230 million in revenue during that same time. While there is currently \$27 million in fund balance, projected spending on a new system architecture and current operating practices are not sustainable at current revenue levels. Continuation of the status quo is projected to erode the available fund balance and produce budget deficits starting in 2023.

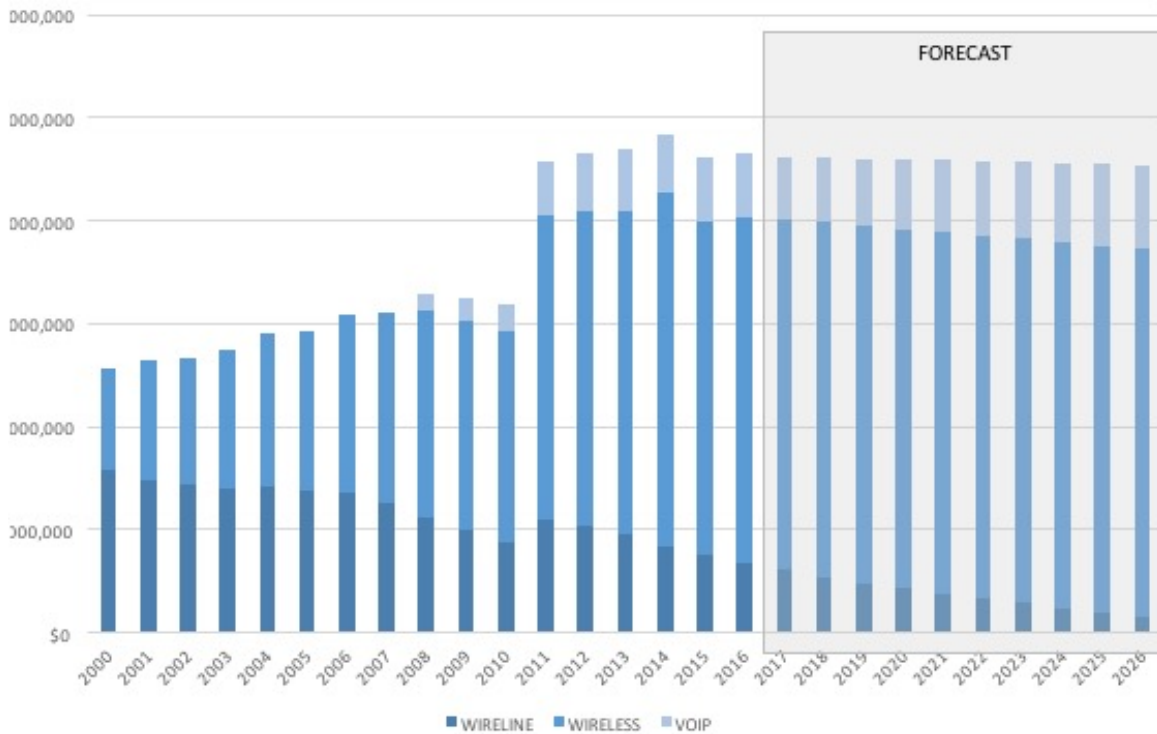
The total cost of the system has grown faster than the available excise tax revenues. The true growth in the cost of the system has been masked by budget carryovers due to delayed capital projects, the one-time bump in the excise tax rate in 2011, and poor historical discipline regarding the budgeting of services.

Excise tax revenues have not kept pace with inflation, declining in real terms (inflation-adjusted), resulting in declining purchasing power over time.

Revenue is forecasted to be relatively flat through 2026. Revenue has not increased since the excise tax increase in 2011, however, little growth in the base number of phone lines was evident

even before that time. While growth is expected in VOIP and wireless lines during the forecast period, these increases will not overcome the rate at which households are abandoning their wired lines.

Exhibit 5: Historical and Forecasted E911 Excise Tax Revenue

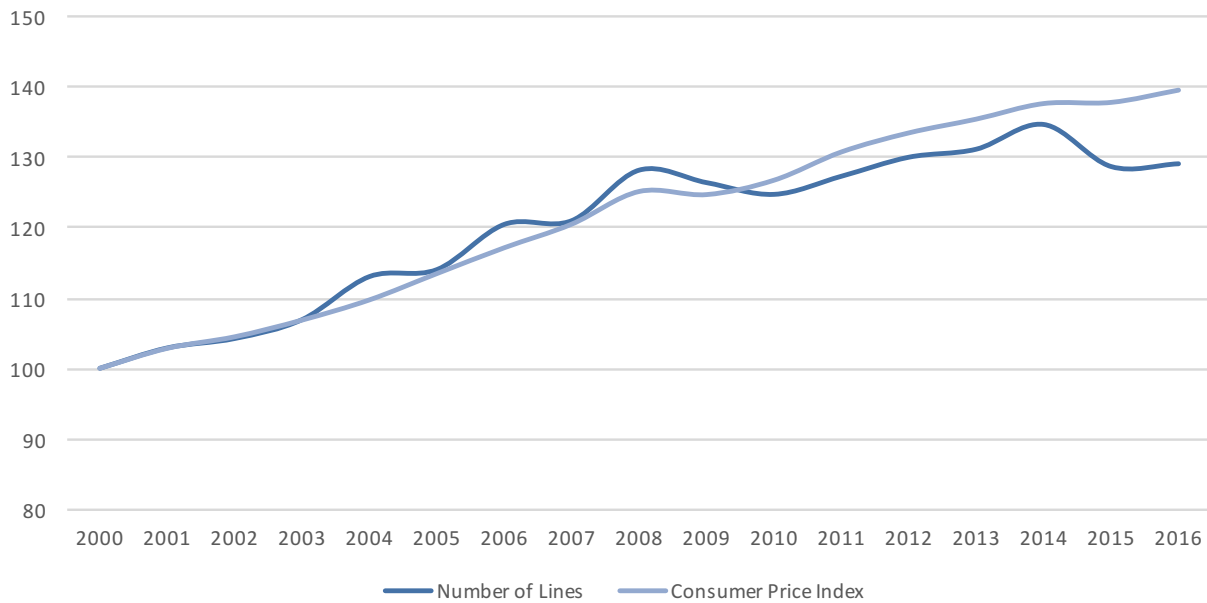


Note: A \$0.20 excise tax rate increase was authorized by the State of Washington in 2011.

The E911 tax is levied based on per line fee and the tax is not a sustainable long-term source of funding for the E911 system. The E911 excise tax base has not grown – remaining essentially flat over the past several years. Internal dynamics of home line departures suggest that there will be no nominal growth in revenue from the tax. The implication is that the real (inflation-adjusted) value of the revenue is declining over time.

The tax base and tax policy that supports program revenues have not kept pace with general inflation, much less the cost of labor and technology. The Exhibit below shows the change in the number of lines relative to the Consumer Price Index (US, all urban consumers). The chart is indexed to the year 2000. By 2016, the difference between CPI and the growth in phone lines is approximately 10%.

Exhibit 6: Change in Number of Phone Lines Relative to Inflation (Index 100 to year 2000)



Capital Investment is needed to assure compliance with National Standards to allow for use of the State ESINet11 and NG911 technologies.

The Technology and Operations Task Force studied multiple system architectures that could meet future requirements of the E911 regional system. Two architectures – the Distributed Architecture and the Single Platform architecture were presented to the Planning Group and the Leadership Group.

From a purely financial perspective, the Distributed architecture is projected to cost less to operate than the Platform alternative. Over the 10-year period ending in 2026 (assumes new platform in 2020), the Distributed architecture is estimated to cost approximately \$2 million less than the Platform architecture. On a total cost of ownership perspective (10 years of ownership from 2020-2030), the Distributed architecture is estimated to cost approximately \$5 million less as shown in the Exhibit below.

Exhibit 7: Comparison of System Architecture Costs

	Alt 1 – Distributed Architecture	Alt 1 – Platform Architecture
One-Time System Implementation Costs (CAPEX)	\$8,181,217	\$7,337,930
Annual System Maintenance Costs (OPEX) - first year	\$385,846	\$348,899
10-year OPEX (incl. refresh x 2)	\$5,829,008	\$5,246,374
Annual Networking Costs	\$0	\$700,000
10-year Networking Costs	\$0	\$7,000,000
Total: 10-year Cost of Ownership	\$14,010,225	\$19,584,304

Note: CAPEX and OPEX system costs based on median of cost estimates received. Networking costs are a placeholder for the two networks for Single Platform.

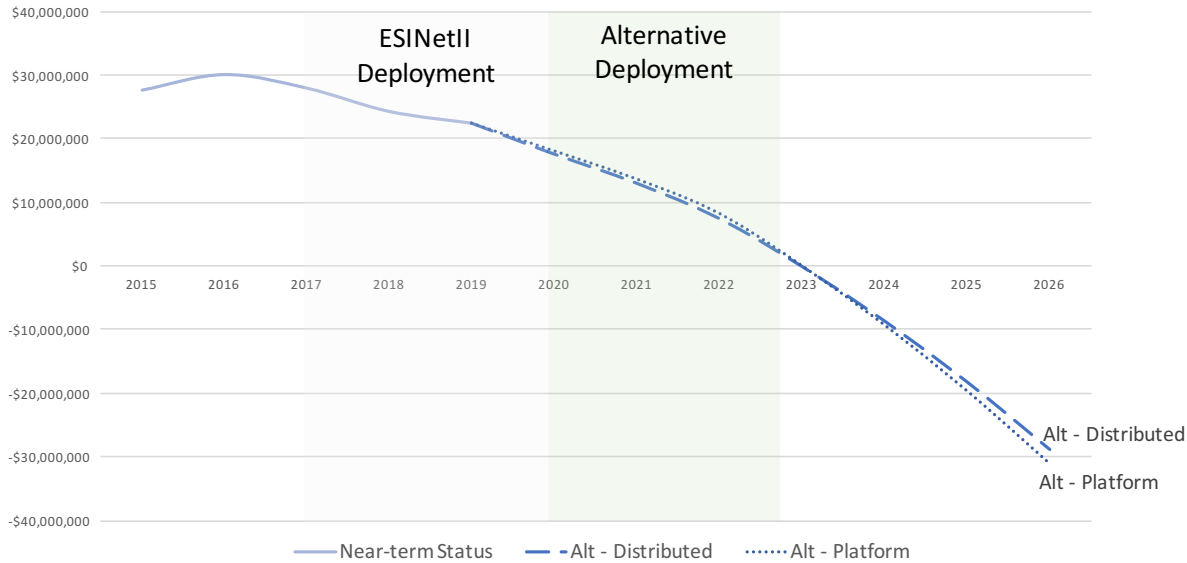
From a capital expenditure (CAPEX) perspective, the Platform architecture could be approximately 7% to 10% less costly than the Distributed architecture to purchase and implement. This could result in a CAPEX savings of between \$545,000 and \$843,000 (range between low and high estimates). From an operating expenditure (OPEX) perspective, the Platform architecture could be approximately 10% to 12% less costly than the Distributed architecture due to efficiencies that could be realized in vendor and/or staff support. This could result in a 10-year OPEX savings of between \$583,000 and \$712,000. Annual savings would be relatively small, with the median cost estimate difference for the first year of maintenance being only approximately \$37,000.

However, networking costs for a Platform system is estimated to be significantly higher. The Platform architecture would cost an additional \$7,000,000 over 10 years (assumes additional network costs of approximately \$700,000 a year). The combination of these three costs leads to a lower total cost of ownership of the Distributed architecture. While there are differing financial outcomes for the two architectures, the impact on the overall financial position is relatively small.

Projected levels of expenditures are forecasted to outpace revenues and lead to negative fund balances in the near future – currently estimated to be in 2023. It should be noted that this forecast is a significant improvement of past forecasts that showed negative fund balances in the next (2019-2020) budget biennium. These improvements represent work completed by King County, the Program Office, PSAPs, and the Finance Task Force to refine the presentation and assumptions used in the forecast.

A new system architecture improves future financial position by potentially lowering current levels of spending. However, neither system architecture choice presents a material difference in the overall financial position of the E911 Program Office. Based on preliminary cost estimates, the Distributed architecture costs marginally less on a total cost of ownership basis; however, the difference is relatively small as percent of total program expenditures – approximately 6% in 2026. The Platform architecture is likely to have operational efficiencies in the form of fewer needed FTEs (not captured in these estimates) that may lower its costs.

Exhibit 8: Comparison of Beginning Fund Balances Between System Architectures



By 2026, the ending fund balance is forecast to have a deficit of \$28.9 million for the Distributed architecture and \$31.0 million for the Platform architecture (it should be noted that the difference in the figures above represents only six years of architecture deployment within the 2017-2026 planning window).

This analysis assumes the following key parameters:

- There is no “status quo” or “no action” option. The deployment of ESINetII will not bring King County and PSAPs up to national standards under current equipment and software. An upgrade will be necessary to bring the county up to national standards following the deployment.
- The Program Office will continue to deliver planned projects and work under existing contracts through the near-term defined as through at least 2019/2020. During this time, the ESINetII would reach full deployment.
- Over the next 2 years, the Program Office is planning on assessing its needs and specifying the configuration of the selected system architecture. Project deployment would occur during the 2020 to 2022 time-frame.
- Current levels of PSAP and Program Office FTE staffing are assumed to continue over the planning period with the following departures.
 - Project management (and subject matter experts) are treated as time-limited staff. Their need is estimated as a load on the capital project for its duration. Therefore, these costs are included as part of the capital budget.
 - An additional 3 FTE are included in the Program Office staffing beginning in 2022 in order to manage and maintain the system. This figure represents guidance received from vendors as part of the cost estimating work done by the T&O Task Force. These are FTEs related to servicing the system architecture above and

beyond the capital programming. Those FTEs might not be new FTEs to the system but would need to be employees with the requisite skills regardless if they are based in the Program Office or PSAPs.

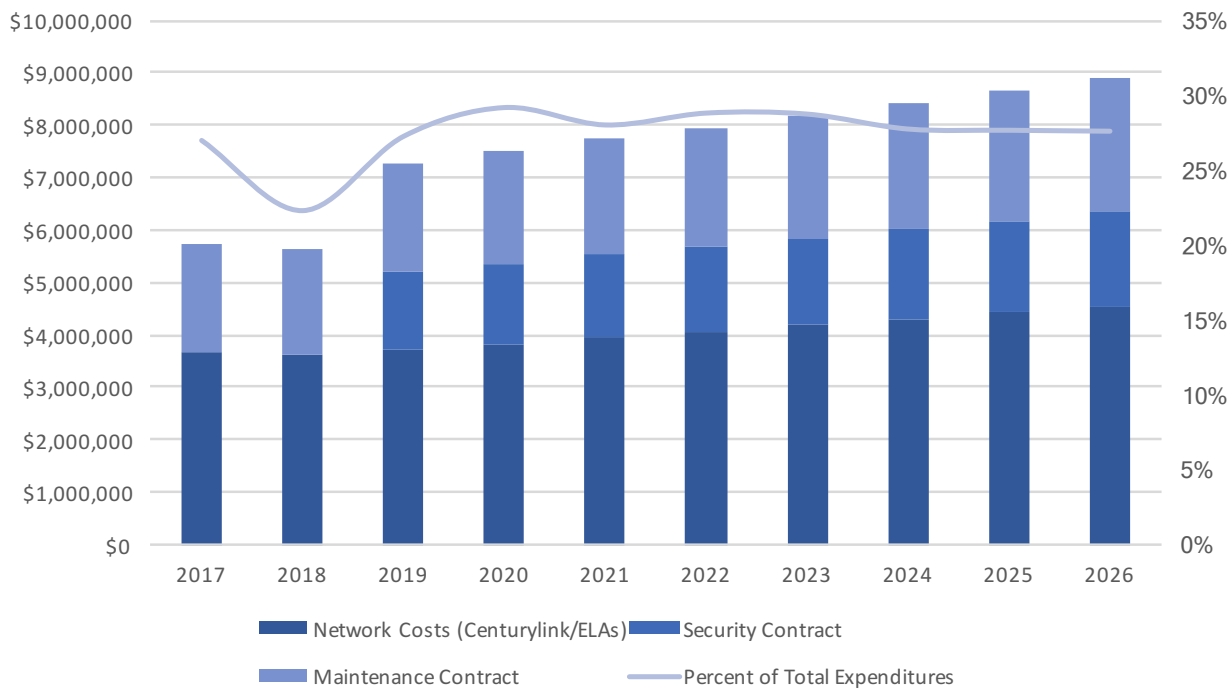
- Total amount of allocations to PSAPs grow at the rate of inflation. This assumption reflects past practice and not a recommendation.
- CAPEX and OPEX costs are modeled per T&O Task Force input at the median cost estimate.
- No historical NG911-related expenses are included past 2017, these expenditures are assumed to be covered by the deployment of the new system architecture. Over the past two years, the Program Office had begun budgeting for some NG-911 expense for a new system. These expenditures will and a new system will be funded via the capital budget.
- The current contract expense related to the SHNS ring is expected to end after ESINetII deployment in 2020. However, it will be replaced by new networking costs in the Platform architecture.

The Technology and Operations Task Force recommended adopting the Platform architecture going forward with the understanding that if new information emerges from the process of defining requirements, alternative architectures could be considered. For the purposes of the financial analysis, the Platform architecture is embedded in the financial assumptions. Their recommendation was adopted by the Planning Group and the Leadership Group.

The need and level of certain future expenditures will need to be evaluated.

As the Program Office plans for a new technology system, they will need to evaluate how much cost savings may materialize from the deployment of ESINetII, new maintenance contracts, and the security of the new system architecture. The Exhibit below shows three categories for expenditures that may be impacted by ESINetII and system architecture deployments. They include current network costs, planned security improvement projects, and maintenance contracts for equipment and software. These estimated future costs represent approximately 25-27% of all operating expenditures in either system architecture alternative (higher in the Platform architecture). Potential savings cannot be accurately estimated at this time given the unknown impacts of ESINetII, negotiation of new vendor contracts and yet-to-be-defined security requirements of the new system. However, savings could be as much as \$25 million.

Exhibit 9: Current and Forecasted Expenditures for Select Contracts



Additional operational, financial, and funding matters will need to be evaluated in order to further improve the financial position of the Program Office.

There are a number of areas of financial opportunity that need to be explored by the Program Office and PSAPs in order to cost-effectively deliver services. These areas include:

- Finding the most cost-efficient number of FTEs necessary to deploy and maintain the regional system.
- Identifying one-time funding approaches for the one-time nature of capital upgrades.
- Defining and controlling expenditures of PSAP-delivered operation and maintenance services.
- Controlling labor costs necessary to deploy and maintain the regional system.
- Exploring other revenue options.

Budget and accounting practices can be improved for better accuracy and accountability.

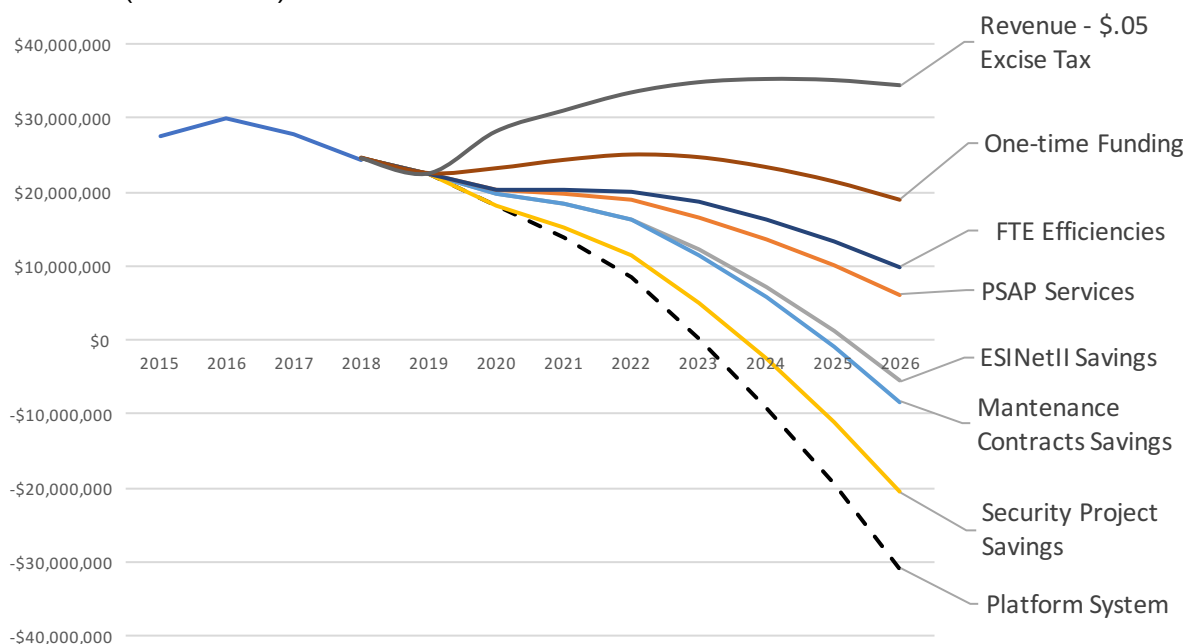
Finally, the Task Force believes there are a number of financial practices and policies that need to be implemented by the Program Office to better coordinate with PSAPs, budget for future needs, and show financial accountability including policies for operating budgets, capital asset management, expenditures, revenues, fund balances and reserves. Past practices regarding budgeting and other accountability measures are improving and continued focus in these areas will help the Program Office more effectively deal with its financial challenges.

E911 Financial Sustainability Plan

The Task Force believes that Program Office should continue to work with IAG and (e.g. E911 Program Office staff and PSAP representatives) to collaboratively develop a 2019-2020 Budget proposal that includes recommended expenditure reductions. This tight level of collaboration is necessary to tie reductions of expenditures to the operational effectiveness of the system.

The following exhibit is a graphic display of the summary of Finance Task Force recommendations to pursue both cost-saving and revenue reforms. The chart shows illustrative impacts of “best-case” implementation of the recommendations discussed in the report and the resulting impact on the Program Office’s beginning fund balance. The lines show the incremental effect of each action in addition to the one below it (in other words, all actions would need to be taken to achieve the top line beginning fund balance of “Revenue - \$0.05 Excise Tax”).

Exhibit 10: Summary of Beginning Fund Balance Impacts of Potential Operational and Revenue Reforms (2017-2026)



The authorizing ordinance called for a 10-year sustainable financial plan. The Finance Task Force has conducted detailed analysis of the E911 Program Office’s financial position and has determined that the fund will have a positive balance until 2023 including all current expenditures and implementation of the proposed technology platform. Beyond 2023, the Finance Task Force identified a series of actions that can, or may, improve the long term financial sustainability of the E911 Regional System.

Some of the actions are dependent on information and decisions that cannot be accurately quantified at this time. For example, any savings that may result from the implementation of the State’s ESINetII are not known since the State is only partially through this project. Therefore, the recommended implementation of a sustainable financial plan will rely on the outcomes of major

milestones that will occur over the next two to five years as both network and technology deployment occurs. As each milestone is reached, the outcome should be reflected in the financial model created by the Task Force and the resulting positive or negative impact recorded. Those outcomes will inform next steps.

For example, if the E911 regional system is not able to gain approval of excise tax reform, local options will be necessitated. If the revenue is secured at some reduced level, that outcome will need to be reflected in the financial model and appropriate steps will need to be taken to compensate for that outcome.

The ten-year financial forecast cannot be responsibly “balanced” now because the long-term impacts on the E911 regional system will change as the unknown variables around technology upgrades become clear. As a practical matter, local government budgets are balanced on an annual or biennial basis. Financial forecasts are used to inform near term decisions that have longer term implications.

While the Finance Task Force has identified actions that could result in a positive fund balance at the end of ten years, we believe that a collaborative process involving all stakeholders is needed to make thoughtful and informed financial decisions.

The Task Force recommends focusing in the following areas. As stated earlier. There is a projected cumulative forecasted budget deficit of \$70 million over the period of 2017-2026. The exhibit below shows the potential magnitude of measures that should be considered by the E911 governing entity.

Exhibit 11: Summary Spending and Potential Operational and Revenue Reforms (2017-2026)

2017-2026 Forecasted Deficit		\$70,260,000	\$70,260,000
Potential Areas of Savings		Low End	High End
Contract - ESINetII	\$40,350,000	\$0	\$10,340,000
Contract - Vendor Maintenance	\$22,560,000	\$0	\$2,880,000
Contract - Security	\$13,100,000	\$0	\$12,170,000
Operations and Maintenance FTE	\$56,370,000	\$3,740,000	n/a
Other PSAP E911 Services	\$118,440,000	\$0	\$11,670,000
Remaining Forecasted Deficit	\$187,900,000	\$66,520,000	\$33,200,000
Potential Areas of Revenues		Low End	High End
One-time Funding Options		\$0	\$7,340,000
New Revenue Solution		\$66,520,000	\$25,860,000
Remaining Forecasted Deficit		\$0	\$0

The Program Office and PSAPs must fundamentally operate the E911 system in a more cost-effective manner.

The operational and provider complexity and coming technology changes of the system presents both a challenge and opportunity for delivering cost-effective services. The E911 systems spends roughly 57% of its expenditures on operations and maintenance service delivered by vendors, the Program Office, and PSAPs. Finding a set of cost-effective solutions must balance the impacts between the Program Office and PSAPs, acknowledging that changes to service delivery and levels of service will be difficult to absorb by both parties while maintaining the operability of the system. There are some near term expenditure reductions that can provide some breathing room before future budget deficits occur. This will also allow time for the development and implementation of a workable revenue strategy to fund the system in the longer term.

The recommendations include work in the following four key areas:

- Capture any potential savings to network, security, and vendor contracts presented by the deployment of ESINetII and a new system architecture.
- Develop the most operationally efficient staffing levels for excise tax funded FTEs at both the Program Office and PSAPs to deliver and maintain the technology side of the system.
- Define E911 service responsibilities and funding of PSAPs to consistently specify: 1) which E911 services they will deliver; 2) what levels of service are suitable for the system; and, 3) what level of revenue support is commensurate with those responsibilities.
- Continue to improve financial policies, processes and transparency.

These areas of network and equipment costs represent a significant amount of annual operating expenditures. Planning and analysis of system needs will shed light on how much cost-savings might materialize in these regarding network, maintenance, and security contracts.

Capture any potential cost-savings derived from the full deployment of ESINetII.

ESINetII represents a major improvement in network services for the Program Office and PSAPs. Current CenturyLink and ELAs (enterprise licensing agreements) expenditures are approximately \$3.6 million a year. At this point in the ESINetII deployment, it is not clear whether trunking and/or costs that exceed the state threshold of subsidy of ESINetII would materially change the cost to the Program Office for network costs. Based on preliminary assessment, of the total \$3.6 million, there are network contracts totaling approximately \$1.4 million a year that will need to be evaluated for possible ESINetII impacts. Currently, the state deploys ESINetII statewide between April 2018 – February 2019 and King County goes live between July – December 2018. The best-case potential savings has been estimated at \$10.3 million over 10 years.

Capture any potential cost-savings from new maintenance contracts associated with the deployment of a new equipment.

Maintenance contracts for equipment and software were estimated by vendors in the T&O Task Force cost-estimating process. Those costs, in the \$400,000 a year range, are significantly lower than current contracts for maintenance (currently about \$1,000,000 a year). However, it is

unclear whether this represents a true “apples-to-apples” comparison. A deeper evaluation of the current maintenance contracts will need to be performed to determine potential savings. As a new system architecture is deployed, it is possible that the nature of the maintenance contract will shift from an equipment basis to a software basis. If this is the case, then perhaps some of the cost-estimate price savings may materialize; however, that will not be known until more planning and analysis is completed in the years to come. The best-case potential savings has been estimated at \$2.8 million over 10 years.

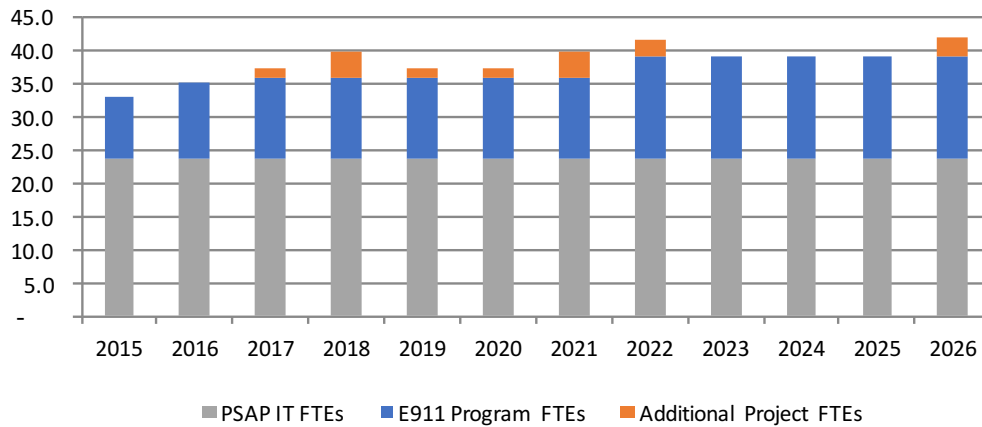
Capture any cost-savings from potentially redundant security improvements.

The Program Office completed a study recommending a series of security projects that would be needed in order to preserve network security integrity. However, the dual deployment of ESINetII and an upgraded system architecture would mean that those security upgrades will need to be re-evaluated and could constitute a place for cost-savings. The best-case potential savings has been estimated at \$12.2 million over 10 years.

These areas are places for further cost-saving, options for one-time capital sources of funding, or options for tax reforms. The Exhibit below summarizes the relative impact of each area.

Recommendation: Create a cost-efficient and operationally sound staffing model for deploying and maintaining E911 equipment and software.

Deployment and maintenance of the new platform system could require 3-5 additional FTEs on an operational basis. There are currently 11 FTEs and 2 dedicated Project Managers from the KCIT PMO (Program Management Office) — 3 of whom provide technical services from the Program Office for the regional system, 2 that provide technical solutions for location and address mapping (GIS/MSAG). There are an additional 23 excise tax-supported FTEs in the PSAPs, for a total of 36 FTEs across the system. If some of the FTEs that are now in the PSAPs could be redeployed to help with the new system architecture and thus maintain the current FTE load, it could save approximately \$3.7 million over the 10 years (this would be the cost of 3-5 fewer FTEs in the system). The E911 Program Office and KCIT will need to assess the skill sets of PSAP technical staff and provide supplementary training as needed.

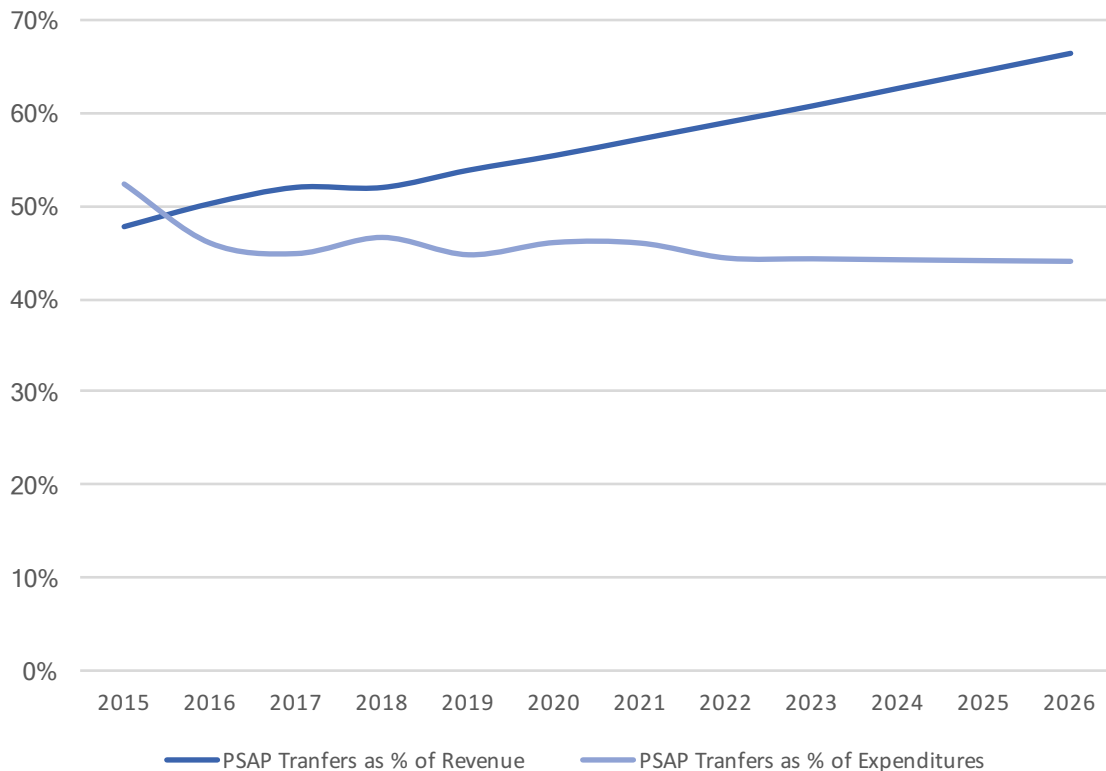
Exhibit 12: Forecasted FTE Counts (Distributed and Platform Architectures)

Finding a way to cover the FTE costs associated with the new system under the current FTE load could save approximately \$3.5 million over the 10 years.

- The low-end savings from this measure could be \$3.7 over 10 years.
- The best-savings from this measure could be higher over 10 years if more a more efficient staffing model can be achieved with the platform architecture.

Define E911 service responsibilities and funding of PSAPs to consistently specify: 1) which E911 services they will deliver; 2) what levels of service are suitable for the system; and, 3) what level of revenue support is commensurate with those responsibilities.

Program Office and PSAPs must work immediately on finding an affordable, fair, and appropriate level of PSAP funding that accounts for the delivery of E911 services but also places the Program Office on the path toward fiscal sustainability. Changes can be made and phased as needed, minimizing the level of disruption in the system. PSAP transfers account for approximately 50% of annual excise tax revenue. Historically, these transfers have grown, trending up with each successive budget. The Exhibit below shows historical and forecasted PSAP distributions as a percent of total revenues and as a percent of total expenditures. While PSAP expenditures are forecasted to remain at roughly 44% of total E911 system expenditures, they will consume a greater and greater share of overall excise tax revenue—the Program Office’s only source of revenue—rising from 48% in 2015 to a forecasted level of 67% by 2026. That level of revenue sharing is unsustainable given other competing needs.

Exhibit 13: Past and Forecasted PSAP Revenue Transfers as Percent of Program Revenue and Expenditures

The rate of excise tax distributions has no recorded policy precedent and reflects past budget practices. For example, fixing the amount at current nominal levels will create some costs-savings – approximately \$11 million over 10 years. Given that E911 revenue represents an average of 20% of total PSAP funding, simply capping the amount of will result in a range of PSAP budget impact between 2-6% less in funding.

However, as shown earlier, E911 excise tax revenues support approximately 20% of PSAP call answering expenses. The funds cover eligible E911 expenses related to equipment, IT/GIS staffing, and other related expenses (call-taker costs are a large reimbursable expense). Nevertheless, a freeze in the level of funding is likely to represent some fiscal challenges for PSAPs given their reliance on membership fees to support their services. Their members, local and special purpose districts, have their own fiscal challenges that make funding increased costs with less revenue a difficult proposition for their decision-makers and constituents.

It is also critical to note that while excise tax contributes to PSAP funding, it is the only source of funding for the Program Office. While King County has supported the Sheriff's Office PSAP with general fund money, the county has not historically contributed general fund resources to the E911 Program Office. Flat revenues and growing PSAP allocations mean that the Program Office has to absorb inflationary increases and also would require them to do more work with less staff.

Regardless, the Program Office and PSAPs will have to work immediately on finding a fair and appropriate level of PSAP funding that accounts for the delivery of E911 services so that changes can be made and phased as needed being careful to avoid adversely impacting the integrity of the regional system. The suggestion of fixing the level to nominal 2017 levels is a suggestion not embraced by all members of the Task Force, but the desire to find clarity on the issue is so the burden of funding cuts can be mutually shared.

As such, this level of service delivery is unsustainable. The task force believes that services provided by PSAPs should specify: 1) which E911 services they will deliver; 2) what levels of service are suitable for the system; and, 3) what level of revenue support is commensurate with those responsibilities. The Task Force has not arrived at an answer to those questions since they must be addressed by both Program Office and PSAP leadership and operations staff. A reduction in the current level of PSAP funding would represent some fiscal challenges for PSAPs given their reliance on membership fees to support their services. Any reduction in PSAP distributions will need to be based on an agreed-upon formula that considers proportionality, as well as the vision for efficient use of public resources and the effective deployment of evolving technology, across the system. Factors such as call volume, population served and support provided by PSAP's for the regional system could also be considered.

- For illustrative purposes, addressing these issues by keeping expenditures at current nominal levels would produce some costs-savings of approximately \$11.6 million over 10 years.

Revenue reforms are needed since the excise tax is not kept pace with inflation or needed expenses in the E911 system.

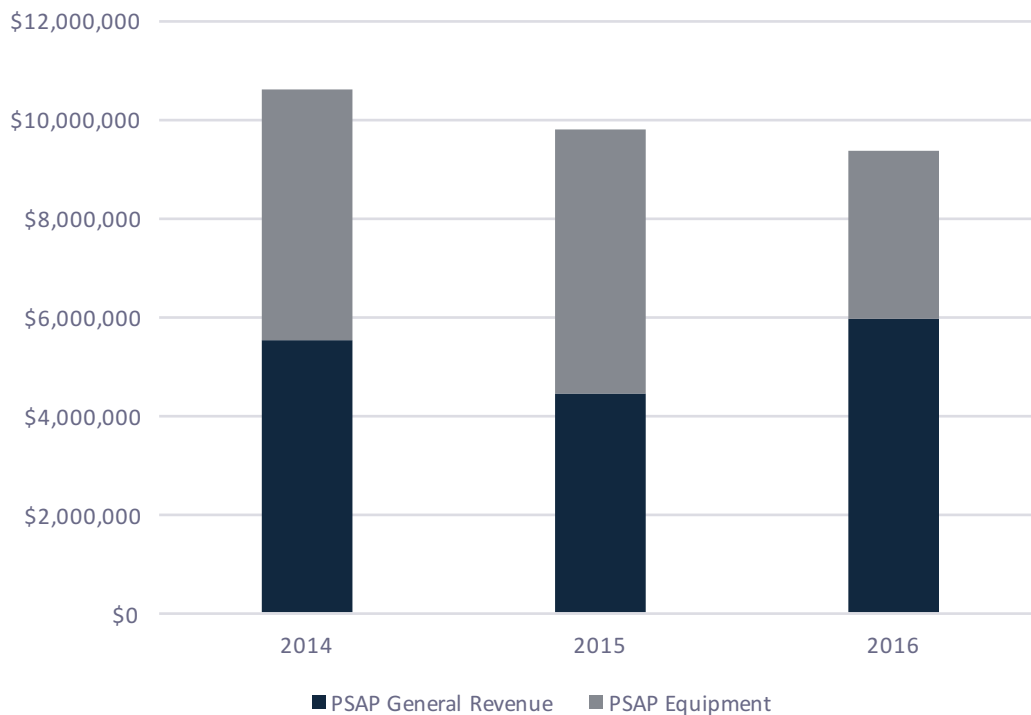
The King County E911 System faces a structural issue related to the adequacy of funding. Demonstrating that the most cost-efficient and accountable spending is in place is important to make the case that new revenues are needed. Revenue has not increased since the excise tax increase in 2011. It is clear to the Task Force that the tax base and tax policy that supports program revenues have not kept pace with inflation, much less the cost of labor and technology resulting the real decline in purchasing power of the excise (for a given dollar, the excise tax buys less today than it did in the past).

The Task Force believes its recommendations for expenditure reductions will help prove that issue out. Work needs to begin immediately to deliver options to the King County Council to find a more adequate, resilient tax base to support the nature of this public safety system. The purchasing power of the tax revenue is declining in real terms (inflation adjusted).

Find options for funding one-time technology upgrades to the system.

Given the challenges of funding the E911 system, the Program Office and PSAPs should explore using future one-time funding sources for technology system upgrades. This should include consideration of PSAP escrow fund balances, E911 fund balance and other non-excise tax sources from the federal (grants), state, county, and local sources. We recommend they be evaluated as part of a one-time capital funding strategy for system upgrades. Over the past three years, end-of-year escrow balances averaged approximately \$9.9 million. Additional work needs to be completed to better understand why individual PSAPs have carried balances and to assess how changes to escrow fund policies impact PSAP cash-flow issues. Based on this analysis, the Program Office and PSAPs can evaluate how much fund balance might be available for capital investments. The Program Office should explore other capital funding sources from federal, state, county, and local agencies.

Both the Program Office and IAG are working on a set of reforms to the PSAP escrow policies to help streamline reimbursements and to clarify eligible expenses to ensure consistency across the system. Based on past reimbursement practices, some PSAPs have carried balances to cover timeliness issues regarding reimbursements since escrow balances fluctuate throughout the year. Additionally, some PSAPs have carried balances for other legitimate purposes, such as saving for equipment purchases, cash flow management, pending reimbursement requests, and smoothing of increases to PSAP member agencies (rate stabilization).

Exhibit 14: Ending Fund Balances for PSAP Escrow Accounts

The Task Force believes the additional work needs to be completed to better understand why individual PSAPs have carried balances and to assess how changes to escrow fund policies (see a later recommendation on this issue) impact PSAP cash-flow issues. From this understanding, both the Program Office and PSAPs can evaluate how much fund balance might be available and whether a one-time assessment process could raise needed funds. Any assessment would need to find a fair and equitable way to levy an assessment through the strategic plan's governance structure.

It should be noted that a detailed analysis of individual PSAP financial plans and budget management practices was not within the scope of the Finance Task Force's charter. Consequently, the relative capacity of individual PSAP's to contribute escrow balances could not be ascertained. Additional work needs to be completed to better understand why individual PSAPs have carried escrow balances and to assess how changes to escrow fund policies impact PSAP cash-flow issues and finances.

- For illustrative purposes, finding one-time sources of revenue could raise the estimated initial cost of the platform architecture of \$7.4 million over 10 years.

Find reforms to the existing excise tax that are more adequate and resilient for the needs of the E911 system.

The Task Force urges that all options, including changes to levy amounts of the current excise tax, levying a consumption tax on telecommunications, considering a ballot measure for use of the public safety sales tax measure, or other property tax based mechanisms be explored as part of

this process. Working with PSAPs and statewide partners to reform the E911 tax base and/or tax policy could put in place a revenue mechanism that better matches the costs of the program services. As stated earlier, the loss in the number of wired lines (a key factor in the assessment of 911 taxes) has led to flat tax revenue collections. In 2011, the state legislature implemented an increase to the excise tax rate to deal with similarly flat collections.

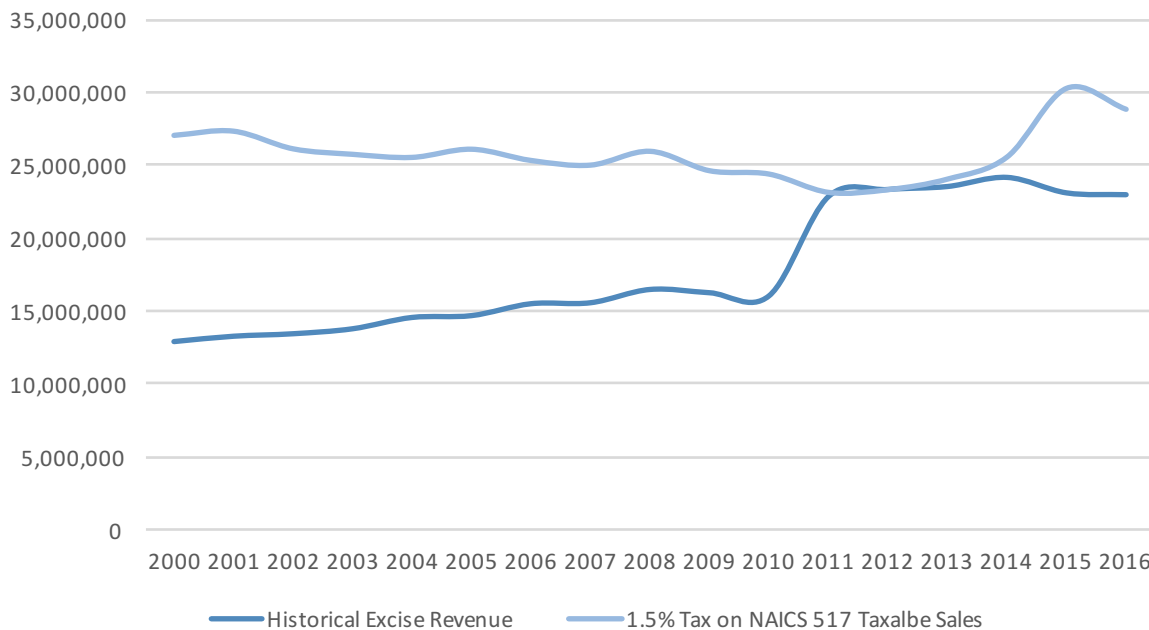
In the future, authority to levy an additional \$0.01 over the current rate of \$0.95 per line/month (county share is \$0.70) would generate an additional \$3 million over 10 years. Likewise, a \$0.05 increase would generate an additional \$15 million over 10 years. An approximately \$0.10 increase starting in 2018 would be needed to maintain a positive fund balance in 2026 under baseline conditions (e.g. no assumption of cost savings). However, the ability to sustain a positive fund balance would require a change to the tax structure that allows it to grow with inflation.

Alternatively, a consumption-based tax could generate more revenue but might be a less predictable source (e.g. a special sales tax on telecommunications services). For illustrative purposes, a county-wide tax on taxable retail sales at a rate of 0.75% of sales proceeds from businesses within NAICS sector 517 could produce similar revenue results. NAICS 517 is in the Telecommunications subsector which is primarily engaged in operating, and/or providing access to facilities for the transmission of voice, data, text, sound, and video. This includes the following business:

- Wired communications carriers
- Telecommunications carriers, cellular telephone
- Cellular telephone stores, primarily selling cellular phone service plans
- Cellular telephone services
- Cellular telephone communication carriers

The Exhibit below illustrates the impact of a hypothetical 1.5% tax on the value of the taxable retail sales in NAICS 517 in King County relative to the revenue collected from the E911 excise tax. Sales have generally declined since 2000 in King County but have picked back up in recent years. Since the excise rate was increased in 2011, a 1.5% tax rate would have generated over \$15 million more than the excise tax.

Exhibit 15: Illustration of a hypothetical tax on Telecommunications sector taxable retail sales



The Public Safety sales tax measure could also be considered. King County currently uses the criminal justice sales tax in RCW 82.14.030 but regional partners could also examine the Public Safety sales tax measure per RCW 82.14.450. This tax must be shared between King County and incorporated cities and would require a public vote. The law allows up to a 3/10th of a percent increase and the county does have untapped capacity with this sales tax. King County put this tax on the ballot in the November 2010 general election for 2/10th of a percent and the measure failed by a margin of 55% oppose and 45% approve.

Regardless of the best option for funding the system, the King County and PSAP member agencies will have to work with their legislative partners to advance the issue to state and local legislators.

Although a revenue solution would greatly contribute to financial sustainability, it is the least certain of the options and largely out of control of the E911 Program Office and the PSAP's as it will require action by the State Legislature or a locally-approved voted measure. Voter fatigue is a factor to consider. Anecdotally, County E911 systems throughout the state are experiencing similar fiscal stress. A coordinated statewide approach to a State Legislative solution should be considered with King County as the lead agency.

Continue to create a set of defined financial policies and procedures.

Finally, the Task Force believes there are a number of financial practices and policies that need to be implemented by the Program Office to better coordinate with PSAPs, budget for future needs, and show financial accountability. It should be noted that the E911 Program Office has made significant progress on improving financial reporting, transparency and accountability.

Create a set E911 Financial Management Policies.

These policies should be tailored to fit the uniqueness of the Program Office's operations. As a starting point, they can be adapted from the King County Comprehensive Financial Management Policies. Greater consistency and standardization of practices enhances the transparency of financial management by providing a clear policy basis and explanation of why certain financial management practices are being followed along with the anticipated outcome. These policies should be specific to the Program Office and include at a minimum:

- Operating budget policies
- Capital asset management
- Expenditures practices
- Revenue monitoring
- Fund balance trends
- Reserves

Create separate operating and capital budgets.

The Program Office has created a distinct capital budget to separate operating and capital costs. This allows a better understanding and ability to report on operating costs. The Program Office and PSAPs will work together through the governance structure to improve communication during the budgeting process. Distinguishing the nature of operating costs (i.e. contracts, labor, etc.) from capital costs (equipment, software, project management, etc.) is essential for understanding current, near-, and long-term financial position of the Program Office.

Create reserve accounts to fully fund future capital projects.

The capital budget should be funded through the use of reserve (or equipment replacement sinking funds). Capital investments should be funded on a pay-as-you-go basis to avoid debt financing if at all possible since the life span of technology may require amortization over a relatively short period of time. Debt also carries with it interest costs. Budgeting for capital projects (and using sinking/reserve funds) outside of operating budget should more accurately reflect the financial position of the Program Office and avoid a previous situation of accumulated fund balances that were depleted to subsidize operating costs.

Include project management staff as part of capital projects.

Project management and subject matter labor costs should be included in the cost of projects in the capital budget. These positions should be time limited expenses and funded as a load on the project. Budgeting for labor tied to capital projects would more accurately reflect the cost of the project as well as avoiding a situation where time-limited staff become part of the operating budget.

Create better oversight of the implementation of capital projects.

In 2017, the E911 Program Office was reorganized under King County Information Technology (KCIT). The Program Office will be able to improve financial transparency by collaborating with KCIT Project Management, Finance, and Business Analysis offices to provide planning and

oversight to projects implementation and costs. This relationship may also leverage the E911 Program Office's ability to negotiate more favorable vendor contracts.

Revise PSAP escrow policies to ensure timely reimbursements for eligible expenses.

The Program Office has been collaborating with the IAG to revise escrow policies so that reimbursement eligibility is clear; review and payment process is streamlined and efficient; policies are comprehensive and provide clear guidance on expectations and requirements for both the Program Office and PSAPs.

Work with the IAG to develop a comprehensive escrow program and policies that govern reimbursements and increase accountability.

The Program office should continue to work with PSAPs through the IAG to better plan and program for E911 funded expenses. While the current practice of reimbursing against the escrow fund for eligible expenses needs some streamlining (above), additional work to develop PSAP-level expense programs could result in more predictable spending where expenses can be prioritized and increase accountability towards supporting the E911 regional system. The IAG is working on policies for:

- The amount of salary and benefits eligible for reimbursement for supported positions at the PSAPs. There is a wide variation of program reimbursable FTE costs. PSAP FTE distributions can be capped at the average wage and benefit cost of technical FTE's across all of the PSAP's. Actual expense could be reimbursed for PSAP's below the average but capped at the average for PSAP's above that amount.
- Escrow fund balances. As shown above, some escrow funds have carried large fund balances. Creating financial management policies for the amount and nature of the fund balances will help PSAPs in their own financial planning and provide more transparency to the E-911 Program and regional governance structure.
- Examine combining the equipment and general revenue distinction into one category. The deployment of ESINetII and system architecture will change the equipment needs of PSAPs that should be reflected in the escrow policy.

Work with PSAP's to determine an agreed-upon basis for allocating tax revenue.

The Program Office has been collaborating with the IAG to create a more transparent escrow funding formula as a basis for a collaborative discussion with the PSAPs on potential revisions to the formula. This work was completed in October 2017. The IAG proposed and the Program Office accepted a new distribution formula based on a 2-year rolling average of 911 calls (voice and text) received at each PSAP as the measure for escrow fund distribution. The adopted recommendation included implementing this formula in 2020.

Engage the state in tax revenue audits.

The Program Office should work with the State Department of Revenue to audit the compliance rate of phone line reporting. Given the critical importance of the excise tax revenue, it is imperative that the Program Office and PSAPs have confidence that the phone line basis be accurate.

Create comprehensive and transparent annual financial reporting documentation and performance metrics

The Program Office has taken strides forward to be a more transparent and accountable organization. Further work should strive to solidify these gains in the form of accessible financial documentation with relevant performance metrics. The Task Force believes that annual financial reporting along the lines demonstrated in the Task Force's work would be a good foundation for better trust and accountability for all players in the region's 911 system. Further work between the Program Office and PSAPs could extend or refine these elements. Regardless, the goal of this process would be to create a transparent financial reporting document and process that would meet outside agency compliance audits.

A performance measure is a numeric description of an agency's work and the results of that work. Performance measures are based on data, and tell a story about whether an agency or activity is achieving its objectives, and if progress is being made toward achieving policy or organizational goals. The following list of metrics could include both input and process measures:

- Input Measures
 - Excise tax revenue indexed to operating expenses. This measure responds for the need to examine the adequacy of revenues relative to expenditures. A rolling three-year average can be included for trend analysis.
 - FTE costs as a percent of all expenditures. Monitoring the rate of change in long-term labor costs is a critical feature of program cost-efficiency.
- Process Measures
 - Performance of budgeted operating and capital expenditures to actual expenditures. Funding and delivering capital projects on-time will guard against cost escalation and large carry over balances from unspent capital funds. In addition, feedback on forecasted operating expenses should help improve budgeting.
 - Percent minimum balance of operating and other reserves. Having reasonable and appropriate fund balances will allow the program to operate on an efficient scale while guarding against unexpected economic shocks. Measuring incremental growth in sinking fund reserves is an indicator of fiscal discipline.
 - Percent of PSAP escrow reimbursement made on-time. Timely reimbursements to PSAP escrow funds will allow PSAPs to better budget and manage their expenses.

Implementation Plan

Developing financial sustainability must necessarily be a collaborative effort between the E911 Program Office and PSAP's. While a revenue solution is recommended, it will require either State Legislative action or a locally-voted tax measure – neither of which are simple or certain. Immediate expenditure reductions are needed along with careful future planning that emphasizes cost-effective technology investments and judicious consideration of new technologies that enhance services.

2018	<p>Complete analysis of escrow balances.</p> <p>Complete revision of E911 PSAP revenue distribution formula.</p> <p>Continue to work with IAG and (e.g. E911 Program Office staff and PSAP representatives) to collaboratively develop a 2019-2020 Budget proposal that includes recommended expenditure reductions (and then with soon to be formed Governance entity).</p>
2019	<p>Implement spending reductions at E911 Office and PSAP's</p> <p>Complete revenue options analysis and present to King County Council</p> <p>Identify sufficient one-time funding sources to fund implementation of the system architecture update</p>
2020	<p>Identify and implement savings associated with deployment of ESINetII</p> <p>Implement new escrow fund distribution formula</p> <p>Pursue revenue option with State Legislature and/or local measures</p> <p>Renegotiate vendor contracts for network access</p>
2021	<p>Implement revenue option if approved</p> <p>Identify amount of further expenditure reductions needed to prevent a deficit position in 2023</p>
2022	<p>Implement expenditure reductions if needed</p>
2023-2026	<p>Sustain levels of spending of new technology and operations model against available revenues.</p>



King County

REGIONAL E-911 STRATEGIC PLAN

WEBLINK FOR PROJECT WEBSITE

<http://www.kingcounty.gov/depts/it/e-911-program/strategic-plan.aspx>