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COST ESTIMATE FOR A NEW PROJECT 25 PHASE 2 RADIO SYSTEM
KING COUNTY, WASHINGTON

JANUARY 13, 2012

PREPARED BY:

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INTRODUCTION

This detailed cost estimate contained in the spreadsheets and supporting documents described below is intended to provide a complete estimate of the cost of replacing the existing King County 800 MHz Radio System with a new Project 25 Phase 2 (2-slot TDMA) digital trunked radio system. The new system would be designed to provide a significantly higher level of coverage than the existing King County Radio System over the urbanized area of the County west of the Cascade foothills and over the main east-west transportation corridors leading into and out of King County (SR 2, I-90, and SR 410). The system is assumed to be configured with dual redundant, geographically separated master sites and would operate with multiple simulcast cells, each consisting of multiple base station repeater sites.

The cost estimate also includes costs for a UHF P25 Phase 2 subsystem and a VHF P25 Phase 2 subsystem, each with two channels, which provide the same level of coverage as the 800 MHz radio system over the urbanized portion of King County and along the transportation corridors described above. These systems will also provide coverage in the mountains in the eastern portion of King County for wildfire and search and rescue operations.

The cost of a complete interconnect system using microwave radios is also included in the estimate.

The cost estimate includes costs for replacement of all 800 MHz existing subscriber equipment and dispatch centers now used on the existing radio system. A small subset of the subscriber units are multi-band radios capable of operating on the VHF and UHF sub-systems as well as the 800 MHz radio system.

Because the cost estimate assumes complete replacement of the radio system site infrastructure and subscriber units in the existing system, it is applicable to an “upgrade” of the existing Motorola radio system or to a complete replacement of that system by a new system selected via a competitive procurement process.

COST ESTIMATE SPREADSHEETS AND SUPPORTING DOCUMENTS

The detailed cost estimate is contained in five separate spreadsheet documents which are tied together in a summary spreadsheet that shows total costs for each system cost component. A separate spreadsheet and a separate text document show the assumptions underlying the various components of the cost estimate. A brief description of each of these spreadsheets and supporting documents is shown below.

SUMMARY SPREADSHEET

Sheet 1 - King County P25 Radio System Cost Estimate Summary Sheet

This spreadsheet shows the total costs for equipment and installation of the following radio system components:

- Repeater Site Equipment (Radio and Backup Power Systems)
- Master Site Equipment (Radio and Backup Power Systems)
- Simulcast Prime Site Equipment (Radio and Backup Power Systems)
- Dispatch Center Equipment (Radio Equipment Only)
- Subscriber Equipment (Equipment, Installation and Programming)

The summary spreadsheet also shows total costs for site infrastructure (buildings, towers, backup generators, etc.) and permitting costs associated with the development of new sites.

A separate section shows the system support and “soft” costs associated with the implementation of the new radio system.

The final line item in the Cost Estimate Summary Sheet is the total cost of the radio system, which is the sum of all of the cost components listed above.

Total System and Subscriber Equipment, Installation and Site Infrastructure Costs	\$288,140,000
<u>System Support and Soft Costs</u>	<u>\$ 88,050,000</u>
Total System Cost	\$376,190,000

SUPPORTING SPREADSHEETS

Sheet 2 - King County P25 Radio System Site Infrastructure Costs

This spreadsheet shows the costs associated with the development of new repeater sites and with the replacement of towers and/or equipment shelters at existing sites. The site development costs are based on six different site scenarios, as described below:

1. Existing King County site: reuse existing shelter, backup power and tower/rooftop unmodified. Added equipment racks and equipment to tower.
2. Existing King County site: reuse existing shelter, backup power and tower structural modification required. Added equipment racks and equipment to tower.
3. (Lowland site) All new King County site compound: (50' x 50') new shelter (10' x 25'), backup power and tower 180ft self-supporting tower.
4. (High site) All new King County site compound: (50' x 50') new shelter (10' x 25'), backup power and tower 180ft self-supporting tower, road work required.

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4. (High site) All new King County site compound: (50' x 50') new shelter (10' x 25'), backup power and tower 180ft self-supporting tower, road work required.
5. Existing King County site: new shelter due to lack of space, backup power and tower unmodified. Add equipment racks and equipment to tower.
6. Existing King County site: reuse existing shelter, backup power, demolish existing tower and add new 180ft self-supporting tower. Add equipment racks and equipment to tower.

The existing sites in the King County 800 MHz Radio System were analyzed and assigned to one of the six scenarios shown above. New sites were assumed to be covered by scenarios 3 and 4, with 4 new sites assumed to be high sites and 24 new sites assumed to be lowland sites. Thirteen of the existing King County sites were assumed to require complete replacement (new equipment shelter and new tower) under scenario 3. Site data for the existing sites is shown in the "Master Site Information" worksheet at the front of the spreadsheet.

For sites covered by scenarios 3, 4, 5 and 6 we made the assumption that the ground space required for these sites would be leased rather than purchased. For new high sites outside of the urbanized area west of the Cascade foothills, it is very likely that new sites would be on leased land, and in the urbanized area of King County there are likely to be difficulties purchasing the small (50' X 50') plots required for new sites, and leasing a section of a larger piece of property is more likely. Lease costs included in the cost estimate for scenarios 3, 4, and 5 are based on an assumed monthly lease of \$2100, with an annual cost increase of 3% over 7 years (the assumed build-out period for the new system). This cost has been converted to a Net Present Value ("NPV") with an assumed annual rate of return of 3% on the initial value shown in the worksheets, which represents the "up-front" dollars that would need to be invested at the beginning of the project to cover the lease costs over the 7-year period at the assumed interest rate. For scenario 6 (new tower only), the assumed monthly lease is assumed to be \$1050 which is half the amount assumed for scenarios 3, 4 and 5. The details of the NPV calculations are shown in Sheet 6, as described below.

The coverage requirements for the new P25 Phase 2 radios system are defined as follows:

1. 97% Service Area Reliability coverage in the bounded area of King County. The bounded area includes the entire geography of each county west of the Cascade Mountain foothill boundary, all cities, and all major roadways. The foothill boundary is defined here as the first topographic contour that exceeds 750 feet of elevation as one travels eastward from Puget Sound.
2. 97% Service Area Reliability coverage in each city within King County (all cities are to be included within the identified bounded areas).
3. The Service Area Reliability shown above assumes operation with belt-level portable radios.

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A total of 28 new repeater sites was assumed for the cost estimate. The number of new sites required was based on an analysis of 97% reliability coverage for belt-level portable 800 MHz radios from the existing sites. The assumed loss relative to a half-wave dipole used in the site requirements analysis shown below is -14.3 dB, which is the loss figure used in other coverage maps produced by other consultants for King County.

The average distance from existing sites to the edge of the 97% belt-level coverage from the existing sites was determined using the coverage prediction maps showing the existing sites, and the new sites were assumed to provide the same coverage radius. New sites were then added throughout the areas of urbanized King County and in the transportation corridors in the eastern part of the County that did not have predicted coverage at the 97% level for belt-level portable radios. This analysis resulted in a total of 56 sites, with 28 of those sites being the existing sites in the King County 800 MHz Radio, and the other 28 sites being new sites.

Following the Master Site Information worksheet is a sheet titled "Overview Total Cost". This sheet shows the costs associated with each scenario, broken down by cost category, as well as the total overall cost for site infrastructure and site development.

The worksheets following the Overall Total Cost worksheet show the site infrastructure costs and the costs associated with site development (permitting, etc.) for each scenario.

Total Site Infrastructure and Site Development Cost \$55,180,000

Sheet 3 - King County P25 Radio System Site Equipment Cost Estimate

Sheet 3 contains the cost estimate for fixed site equipment for the new radio system, including base station repeaters and associated equipment, network equipment at remote repeater sites, battery backup power systems, P25 master site equipment, and simulcast prime sites for the simulcast subsystems in the new radio system.

The cost estimate assumes a total of 56 repeater sites (as described above), 2 P25 master sites (dual-redundant and geographically separate), and 9 simulcast prime sites.

For purposes of the cost estimate, the portion of the radio system in the urbanized part of King County (west of the Cascade foothills) is assumed to have 4 simulcast subsystems. The 800 MHz subsystem in the transportation corridors is assumed to have 3 simulcast subsystems. The VHF and UHF sub-systems in the transportation corridors are assumed to use a single simulcast subsystem. Therefore, a total of 8 simulcast prime sites is assumed for purposes of the cost estimate. The actual configuration of these subsystems, other than the number of prime sites, is not critical for purposes of estimating costs.

Following the sheet titled “Site Totals” which shows the sub-totals for master sites, simulcast prime sites, and repeater sites, as well as the site equipment and installation total for all sites, there are additional worksheets showing the site equipment costs for each type of site assumed in the cost estimate. These worksheets are described below:

1. Master – This worksheet shows the individual line items and the total equipment cost for each P25 master site, and the number of sites assumed for each category.
2. Prime 800 – This worksheet shows the individual line items and the total equipment cost for each urbanized area 800 MHz simulcast prime site.
3. Prime 800 Hwys – This worksheet shows the individual line items and the total equipment cost for the transportation corridor 800 MHz simulcast prime site.
4. Prime VHF – This worksheet shows the individual line items and the total equipment cost for each VHF simulcast prime site.
5. Prime UHF – This worksheet shows the individual line items and the total equipment cost for each UHF simulcast prime site. (The costs for the VHF and UHF prime sites are identical, and the cost estimate assumes that the VHF and UHF simulcast systems will use the same sites and share the same prime site.)
6. Trunking 800 – This worksheet shows the individual line items and the total equipment cost for each urbanized area 800 MHz simulcast base station repeater site.
7. Trunking 800_VHF_UHF – This worksheet shows the individual line items and the total equipment cost for each urbanized area 800 MHz simulcast base station repeater site which also has VHF and UHF base stations that are part of the VHF/UHF simulcast sub-systems.
8. Trunking 800_VHF_UHF Hwys – This worksheet shows the individual line items and the total equipment cost for each transportation corridor 800 MHz simulcast base station repeater site which also has VHF and UHF base stations that are part of the VHF/UHF simulcast sub-systems.

The unit costs shown in the worksheets are based on list prices (or on discounted prices with system discounts removed) obtained from system contracts and proposals for Motorola P25 radio systems similar to the proposed King County P25 Phase 2 Radio System, from distributors’ list pricing (e.g. Tessco and/or Hutton) for non-proprietary system components such as transmission lines and antennas, or from manufacturer’s quotations for comparable equipment (e.g. for rectifier and battery sub-systems).

We were not able to obtain unit pricing information for all of the hardware, firmware, and software items listed in the master site workbook, so we have added a line item at the end of the equipment list for the master site to account for the items shown in the list for which we do not have reliable unit pricing. The adjustment factor shown at the end of the master site equipment list is based on the estimated cost for a redundant master site similar to the master site assumed

for the King County system obtained during discussions with system owners who are implementing or are about to implement Motorola P25 Phase 2 systems.

Prime sites are assumed to be configured with the “high availability” option, which provides a higher number of available channels in the event of a switch failure at the prime site than the standard configuration.

Urbanized area simulcast sites are assumed to have 28 800 MHz base stations (24 base stations repeaters for voice channel use, and 4 base stations used for redundant control channels). Existing IntelliRepeater stand-alone sites in the existing King County 800 MHz radio system are assumed to be full 28 channel simulcast sites in the new system.

Urbanized area simulcast repeater sites with VHF and UHF sub-systems are assumed to have 28 800 MHz base stations (24 base stations repeaters for voice channel use, and 4 base stations used for redundant control channels), plus 2 VHF and 2 UHF base station repeaters.

Transportation corridor simulcast repeater sites with 800 MHz channels only are assumed to have 8 800 MHz base stations (6 base station repeaters for voice operation and 2 base stations used for redundant control channels).

Transportation corridor simulcast repeater sites with 800 MHz, VHF and UHF channels are assumed to have 8 800 MHz base stations (6 base station repeaters for voice operation and 2 base stations used for redundant control channels), 2 VHF base station repeaters and 2 UHF base station repeaters.

A total of 10 sites with both 800 MHz and VHF/UHF base stations is assumed for purposes of this cost estimate.

The configuration of master sites, prime sites, and simulcast repeater sites assumed in the cost estimates is based on system configuration information contained in Planner and System documents for Motorola Astro 25 Integrated Voice and Data Systems, Release 7.11.

Total Site Equipment Cost	\$70,180,000
<u>Total Site Equipment Installation Cost</u>	<u>\$ 1,900,000</u>
Total Site Equipment & Installation Cost	\$72,080,000

Sheet 4 -King County P25 Radio System Dispatch System Cost Estimate

Sheet 4 contains the cost estimate data for the dispatch systems that would be part of the new P25 Phase 2 800 MHz radio system. The number of dispatch facilities and the number of dispatch positions in each facility are based on the existing dispatch facilities now used in the

various subsystems of the current King County 800 MHz Radio System and the Port of Seattle 800 MHz Radio System. The worksheets in the Dispatch System Cost Estimate spreadsheet are described below:

1. Summary – This worksheet contains a tabulation of the total quantities and costs for each equipment item used in the dispatch systems, broken out by sub-system. The total cost for dispatch equipment and installation is shown at the bottom right of the worksheet. (NOTE: the Labor and Subcontract columns in the worksheets in this spreadsheet and the subsequent worksheets are not used; the installation costs for the dispatch equipment is accounted for separately in the totals at the bottom right of the spreadsheet).
2. Port of Seattle – This worksheet contains a tabulation of the total quantities and costs for each equipment item used in the Port of Seattle dispatch systems, broken out by dispatch center. The total cost for Port of Seattle dispatch equipment (installation is included in the Summary worksheet) is shown at the bottom right of the worksheet.
3. Seattle Sub-Region - This worksheet contains a tabulation of the total quantities and costs for each equipment item used in the City of Seattle dispatch systems, broken out by dispatch center. The total cost for City of Seattle dispatch equipment (installation is included in the Summary worksheet) is shown at the bottom right of the worksheet.
4. King County Sub-Region - This worksheet contains a tabulation of the total quantities and costs for each equipment item used in the King County dispatch systems, broken out by dispatch center. The total cost for King County dispatch equipment (installation is included in the Summary worksheet) is shown at the bottom right of the worksheet.
5. ValleyCom Sub-Region - This worksheet contains a tabulation of the total quantities and costs for each equipment item used in the Valley Communications dispatch systems, broken out by dispatch center. The total cost for Valley Communications dispatch equipment (installation is included in the Summary worksheet) is shown at the bottom right of the worksheet.
6. EPSCA Sub-Region - This worksheet contains a tabulation of the total quantities and costs for each equipment item used in the EPSCA dispatch systems, broken out by dispatch center. The total cost for EPSCA dispatch equipment (installation is included in the Summary worksheet) is shown at the bottom right of the worksheet.

7. Assumptions and Source – This worksheet shows the equipment types and model numbers assumed for each line item in the cost estimate.

Total Dispatch System Equipment Cost	\$11,610,000
<u>Total Dispatch System Installation Cost</u>	<u>\$ 350,000</u>
Total Dispatch System Equipment & Installation Cost	\$11,960,000

Sheet 5 - King County P25 Radio System Microwave Radio Interconnect Cost Estimate

Sheet 5 contains the cost estimate for a new microwave radio interconnect system to support the King County P25 Phase 2 radio system. The worksheets contained in this spreadsheet are described below:

1. Microwave Radio Cost Summary – This sheet contains a summary of the costs of the microwave interconnect system, broken out by type of link (loop protected or spur) and by frequency band. This sheet also contains the total microwave interconnect system equipment cost and installation cost at the bottom of the worksheet.

The cost estimate assumes: that each urban area simulcast site will have a path into the site and a path out of the site as part of a protected loop; that the transportation corridor sites will be linked back to the urban area via a daisy-chain of spur links, and each dispatch facility will have a link in and out and will be included in the simulcast system protected loop. A small number of links configured for space diversity is included in the totals, both for the loop protected links and for the spur links. Frequency bands are assumed to be primarily 11 GHz in the urbanized area and 6 GHz in the transportation corridors (the difference in cost for equipment between these bands is minimal, so the frequency band assumptions do not have a significant impact on the overall system cost estimate).

2. Microwave Radio Costs – This sheet shows the estimated costs for microwave radio equipment, broken out by frequency band and link configuration.
3. Microwave Antenna System Costs - This sheet shows the estimated costs for microwave antenna equipment, broken out by frequency band and link configuration.

Microwave radio costs are based on WSCA pricing for microwave radio equipment and list prices (obtained from distributors such as TESCO or Hutton) for microwave antenna system equipment.

Total Interconnect Equipment Cost	\$8,900,000
<u>Total Interconnect System Installation Cost</u>	<u>\$ 250,000</u>
Total Interconnect Equipment & Installation Cost	\$9,150,000

Sheet 6 - King County P25 Radio System Subscriber Equipment Cost Estimate

Sheet 6 contains the cost estimate for subscriber equipment, broken down by radio type (mobile, portable) and by representative model number (public safety high-tier multiband, public safety high-tier single band, and non-public safety). A description of the separate worksheets in Sheet 6 is shown below:

1. Summary – This sheet shows the number of subscriber units assumed for each of the sub-systems in the existing King County 800 MHz Radio System, and the Port of Seattle System, sorted by type of subscriber unit (radio). The sheet also shows the estimated cost for each radio type, as well as the estimated costs for programming and installation by radio type. The total estimated cost for subscriber units is shown at the bottom right of the worksheet.
2. APX7500 Mobile - 800, UHF, VHF – This sheet shows the configuration options and costs for a multiband high-tier mobile radio configured for tri-band trunked P25 Phase 2 operation (800 MHz, VHF and UHF).
3. APX7500 Mobile - 800 & VHF or UHF – This sheet shows the configuration options and costs for a multiband high-tier mobile radio configured for dual-band trunked P25 Phase 2 operation (800 MHz and VHF or 800 MHz and UHF).
4. APX7500 Mobile - 800 MHz Only - This sheet shows the configuration options and costs for a multiband high-tier mobile radio configured for 800 MHz trunked P25 Phase 2 operation (800 MHz only).
5. APX6500 Mobile - 800 MHz - This sheet shows the configuration options and costs for a single-band high-tier mobile radio configured for trunked P25 Phase 2 800 MHz operation.
6. APX6500 Mobile - Non-P.S. - This sheet shows the configuration options and costs for a single-band high-tier non-public safety mobile radio configured for trunked P25 Phase 2 800 MHz operation. (The difference between the public safety mobile radios and the non-public safety mobile radios is that the public safety radios have encryption and Over-the-Air-Rekeying (OTAR) enabled, and the non-pubic safety mobile radios do not have encryption or OTAR).
7. APX7000 Portable - 800 UHF VHF - This sheet shows the configuration options and costs for a multiband high-tier portable radio configured for tri-band trunked P25 Phase 2 operation (800 MHz, VHF and UHF).

8. APX7000 Portable - 800 & VHF or UHF - This sheet shows the configuration options and costs for a multiband high-tier portable radio configured for dual-band trunked P25 Phase 2 operation (800 MHz and VHF or 800 MHz and UHF).
9. APX7000 Portable - 800 MHz Only - This sheet shows the configuration options and costs for a multiband high-tier portable radio configured for 800 MHz trunked P25 Phase 2 operation (800 MHz only).
10. APX6000 Portable - This sheet shows the configuration options and costs for a single-band high-tier portable radio configured for trunked P25 Phase 2 800 MHz operation.
11. APX6000 Portable Non-P.S. - This sheet shows the configuration options and costs for a single-band high-tier non-public safety portable radio configured for trunked P25 Phase 2 800 MHz operation. (The difference between the public safety portable radios and the non-public safety portable radios is that the public safety radios have encryption and Over-the-Air-Rekeying (OTAR) enabled, and the non-public safety portable radios do not have encryption or OTAR.)
12. APX4000 Portable – This sheet shows the configuration options and costs for a single-band low-tier (non-public safety) portable radio configured for trunked P25 Phase 2 800 MHz operation.

The unit costs shown in the worksheets are based on list prices (discounted prices with system discounts removed) obtained from system contracts and proposals for Motorola P25 radio systems similar to the proposed King County P25 Phase 2 Radio System.

Total Subscriber Equipment Cost	\$126,390,000
<u>Total Subscriber Equipment Installation Cost</u>	\$ 5,060,000
Total Subscriber Equipment & Installation Cost	\$131,450,000

Sheet 7 - King County Radio System Lease & FTE Cost NPV Calculations

Sheet 7 shows the calculations used to provide the Net Present Value (“NPV”) of the cost site leases for new sites and for existing sites with an expanded footprint resulting from the addition of a new equipment shelter. This sheet also shows the NPV of cost of providing two FTEs for King County project managers over the duration of the new radio system project, which is assumed to be 7 years. Net Present Value represents the amount of “up front” dollars that would need to be invested at the beginning of the project to cover these costs over the assumed 7-year implementation period, assuming a certain rate of return on the initial dollars—assumed to be 3% in this case. The separate worksheets shown in Sheet 7 are described below:

1. New Shelter & Tower – Lease – This worksheet shows the NPV calculations for the lease cost for a site with a new shelter and a new tower, based on an initial monthly lease of \$2100, an annual increase of 3%, and an interest rate of 3%. The NPV based on these assumptions is \$173,356.58.
2. New Tower Only – Lease – This worksheet shows the NPV calculations for the lease cost for a site with a new shelter and a new tower, based on an initial monthly lease of \$1050, an annual increase of 3%, and an interest rate of 3%. The NPV based on these assumptions is \$86,678.29.
3. King County FTEs – This worksheet shows the NPV calculations for the cost of two FTEs (“Full Time Equivalent”) for two King County Project Managers over the duration of the new radio system project, based on annual compensation of \$160,000, an annual cost-of-living escalator of 2.6%, and an interest rate of 3%. The NPV based on these assumptions is \$780,432.28 per FTE, or a total of \$1,560,864.56.

The monthly lease costs shown above are based on typical communications site lease costs in the Puget Sound region.

Sheet 8 - King County P25 Radio System Cost Estimate – Assumptions

This sheet contains a list of the assumptions underlying the cost estimate, sorted by categories.

Appendix A - King County P25 Radio System - Site Development & Land Use Cost Assumptions

This text document contains the specific assumptions underlying the site development and land use cost estimate shown in Sheet 2 above.

Sheet 1 - King County P25 Radio System Cost Estimate Summary Sheet

King County P25 Phase 2 Radio System Cost Estimate

King County P25 Phase 2 Radio System Cost Estimate
 Cost Estimate Summary
 1/13/2012

SITE INFRASTRUCTURE, SITE EQUIPMENT, SUBSCRIBER UNITS, AND INSTALLATION COSTS	
Repeater Sites - Equipment (56 Repeater Sites)	\$ 70,180,000.00
Repeater Sites - Installation (56 Repeater Sites)	\$ 1,900,000.000
Repeater Sites - Equipment and Installation Costs - Sub-Total	\$ 72,080,000.00
Master Site Equipment (Dual Redundant Master Sites)	\$ 2,500,000.00
Master Site Installation (Dual Redundant Master Sites)	\$ 70,000.000
Master Site - Equipment and Installation Costs - Sub-Total	\$ 2,570,000.00
Simulcast Prime Site Equipment (9 Prime Sites)	\$ 5,680,000.00
Simulcast Prime Site Installation (9 Prime Sites)	\$ 70,000.000
Simulcast Prme Sites - Equipment and Installation Costs - Sub-Total	\$ 5,750,000.00
Dispatch Equipment	\$ 11,610,000
Dispatch Equipment Installation	\$ 350,000
Dispatch Equipment and Installation Costs - Sub-Total	\$ 11,960,000
Interconnect System Equipment	\$ 8,900,000
Interconnect System Installation	\$ 250,000
Interconnect System Equipment and Installation - Sub-Total	\$ 9,150,000
System Equipment Costs - Total	\$ 98,870,000
System Installation Costs - Total	\$ 2,640,000
System Equipment and Installation Costs - Total	\$ 101,510,000
Subscriber Equipment	\$ 126,390,000
Subscriber Equipment Installation and Progmring	\$ 5,060,000
Subscriber Equipment and Installation & Programming	\$ 131,450,000
Site Infrastructure and Permitting Costs - Total	\$ 55,180,000
System & Subscriber Equipment, Installation & Site Infrastructure Costs - Total	\$ 288,140,000

SYSTEM SUPPORT & SOFT COSTS				
System Project Management	1	LS	6.2%	\$ 6,110,000
System Engineering	1	LS	3.4%	\$ 3,350,000
System Technologist	1	LS	3.5%	\$ 3,440,000
System Staging	1	LS	3.9%	\$ 3,880,000
System Documentation	1	LS	2.0%	\$ 1,980,000
Mobilization	1	LS	3.0%	\$ 2,970,000
Field Testing & Optimization	1	LS	3.5%	\$ 3,470,000
Coverage and System Acceptance Testing	1	LS	2.4%	\$ 2,400,000
Shipping	1	LS	2.0%	\$ 1,980,000
Spare Parts	1	LS	3.0%	\$ 2,970,000
Training	1	LS	2.0%	\$ 1,980,000
Sales Tax	1	LS	9.5%	\$ 21,400,000
Contingency	1	LS	10.0%	\$ 9,890,000
Warranty (per additional year)	3	Year	3.8%	\$ 11,280,000
System Update at Acceptance	1	LS	2.2%	\$ 2,160,000
Performance Bond	1	LS	1.3%	\$ 1,280,000
King County Project Management (NPV of 2 FTEs over project duration of 7 years)	2	LS	N/A	\$ 1,570,000
Engineering Consultant - Conceptual Design, Bid Specifications, Procurement Assistance, Installation and Testing Supervision, Project Management & Coordination	1	LS	6%	\$ 5,940,000
SYSTEM SUPPORT & SOFT COSTS - TOTAL				\$88,050,000

SYSTEM TOTAL COST - SITE INFRASTRUCTRE, SITE EQUIPMENT, INSTALLATION, SUBSCRIBER UNITS, AND SYSTEM SUPPORT AND SOFT COSTS	\$ 376,190,000
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Sheet 2 - King County P25 Radio System Site Infrastructure Costs

King County P25 Phase 2 Radio System Cost Estimate

Tacoma Water
Consultants Fee Proposal

Sites	Quantity	Construction Estimate (per site)	Construction Total	Permit Fees	Lease/Land Purchase	Consultants Fees	Antenna Equipment and RF design not included	Totals
Scenario #1	4	\$62,775.00	\$251,100.00	\$76,200.00	\$40,000.00	\$632,960.00	\$0.00	
Scenario #2	0	\$130,275.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Scenario #3	37	\$596,700.00	\$22,077,900.00	\$3,045,100.00	\$6,784,193.36	\$9,589,937.50	\$0.00	
Scenario #4	4	\$736,425.00	\$2,945,700.00	\$329,200.00	\$743,426.31	\$1,118,700.00	\$0.00	
Scenario #5	8	\$209,250.00	\$1,674,000.00	\$450,400.00	\$1,486,852.62	\$1,693,680.00	\$0.00	
Scenario #6	3	\$464,400.00	\$1,393,200.00	\$171,600.00	\$297,534.87	\$372,495.00	\$0.00	
	56	Totals	\$28,341,900.00	\$4,072,500.00	\$9,352,007.16	\$13,407,772.50	\$0.00	\$55,174,179.66

Scenarios

- Existing King County site - reuse existing shelter, backup power and tower unmodified. Added equipment racks and equipment to tower
- Existing King County - site reuse existing shelter, backup power and tower structural modification required. Added equipment racks and equipment to tower.
- (Low land site) All new King County site new shelter (50x 50), backup power and tower 180ft SS
- (High site) All new King County site compound (50x50) new shelter (10x 25), backup power and tower 180ft SS, road work required
- Existing King County site - new shelter due to lack of space, backup power and tower unmodified. Added equipment racks and equipment to tower
- Existing King County site - reuse existing shelter, backup power, demo existing tower all new 180ft SS tower. Added equipment racks and equipment to tower.

King County P25 Phase 2 Radio System Cost Estimate

1/13/2012



NorthWest Tower Engineering
 2210 Hewitt Ave. Suite 209
 Everett, WA 98201-3767
 Phone: 425-258-4248
 Fax: 425-258-4289

Scenario #1

1. Existing King County site - reuse existing shelter, backup power and tower unmodified. Added equipment racks and equipment to tower

Item	Qty	Sub-Total	MU	TOTAL	ACTUAL	TAX	SHIP/SPCL
Sitework							
Site Setup/ Mobilizations		\$5,000.00	35%	\$6,750.00			
Site Layout Staking		\$0.00	35%	\$0.00			
Clearing		\$0.00	35%	\$0.00			
Earthwork		\$0.00	35%	\$0.00			
Drainage scheme		\$0.00	35%	\$0.00			
Special Inspections		\$5,000.00	35%	\$6,750.00			
Road upgrade (Driveway - minor)		\$0.00	35%	\$0.00			
Road Upgrade (5-miles)		\$0.00	35%	\$0.00			
Noise Mitigation		\$2,000.00	35%	\$2,700.00			
Site Paving/Gravel		\$0.00	35%	\$0.00			
Landscaping/Grass		\$0.00	35%	\$0.00			
Standard Site Grounding		\$5,000.00	35%	\$6,750.00			
Mountain Top Grounding (XIT Rods)		\$0.00	35%	\$0.00			
Fencing		\$0.00	35%	\$0.00			
Site Cleanup - Demobilization		\$3,000.00	35%	\$4,050.00			
Tower							
Tower (Stamped Dwg's & Tower Steel)		\$0.00	35%	\$0.00			
Tower Delivery (Anchor Bolts Separate)		\$0.00	35%	\$0.00			
Existing tower demolition		\$0.00	35%	\$0.00			
Tower Upgrades/modifications		\$0.00	35%	\$0.00			
Foundation (Matt Type)		\$0.00	35%	\$0.00			
Foundation (Drilled Pier Caisson)		\$0.00	35%	\$0.00			
Erection		\$0.00	35%	\$0.00			
70 Ton Crane (Mob, Rental, Operation)		\$5,000.00	35%	\$6,750.00			
Ice Bridge (20-ft)		\$0.00	35%	\$0.00			
Grounding (Tower, Antenna & Lines)		\$0.00	35%	\$0.00			
Antenna and line work install (Included in Radio System Installation Cost)		\$0.00	35%	\$0.00			
Migration		\$10,000.00	35%	\$13,500.00			
Building							
Structure		\$0.00	35%	\$0.00			inc
Foundation		\$0.00	35%	\$0.00			
Installation of radio equipment		\$0.00	35%	\$0.00			
Installation of shelter		\$0.00	35%	\$0.00			
Crane		\$0.00	35%	\$0.00			
Fire Protection		\$0.00	35%	\$0.00			
Com Trench		\$0.00	35%	\$0.00			
Transformer Upgrade		\$3,500.00	35%	\$4,725.00			
Power to Building (from on site meter)		\$0.00	35%	\$0.00			
Mics Electrical Power Work		\$7,500.00	35%	\$10,125.00			
Permits							
Use Permit		\$0.00	35%	\$0.00			
Electrical Permit		\$500.00	35%	\$675.00			
Generator							
Generator/ Switch gear	1	\$0.00	35%	\$0.00			
Generator Pad		\$0.00	35%	\$0.00			
Fuel Tank (Standby in City)		\$0.00	35%	\$0.00			
Fuel Tank (Standby Mountain Top)		\$0.00	35%	\$0.00			
Fill Fuel Tank and Final Testing		\$0.00	35%	\$0.00			
Installation		\$0.00	35%	\$0.00			-
Not Included (separte spreadsheet)							
Land use and Building Permits							
Radio equipment and coax							
Consultants fees							

TOTAL: \$46,500.00 \$62,775.00 _____ :



Assumptions for Scenario #1

- Tower meets rev G
- (2) 6ft HP dishes
- (2) 800 MHz mast on new mounts
- Existing power supply
- Existing backup power

Scenarios

1. Existing King County site: reuse existing shelter, backup power and tower/rooftop unmodified. Add equipment racks and equipment to tower
2. Existing King County site: reuse existing shelter, backup power and tower structural modification required. Add equipment racks and equipment to tower.
3. (Lowland site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
3. (High site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
5. Existing King County site: new shelter due to lack of space, backup power and tower unmodified. Add equipment racks and equipment to tower
6. Existing King County site: reuse existing shelter, backup power, demo existing tower all new 180ft SS tower. Add equipment racks and equipment to tower.

Additional Assumptions:

Site topography such that retaining walls and other site stabilization measures not required

Sites have power and telco available. Dual prime generator scenario not included

King County P25 Phase 2 Radio System Cost Estimate

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Scenario #2

2. Existing King County - site reuse existing shelter, backup power and tower structural modification required. Added equipment racks and equipment to tower.

Item	Qty	Sub-Total	MU	TOTAL	ACTUAL	TAX	SHIP/SPCL
Sitework							
Site Setup/ Mobilizations		\$5,000.00	35%	\$6,750.00			
Site Layout Staking		\$0.00	35%	\$0.00			
Clearing		\$0.00	35%	\$0.00			
Earthwork		\$0.00	35%	\$0.00			
Drainage scheme		\$0.00	35%	\$0.00			
Special Inspections		\$5,000.00	35%	\$6,750.00			
Road upgrade (Driveway - minor)		\$0.00	35%	\$0.00			
Road Upgrade (5-miles)		\$0.00	35%	\$0.00			
Noise Mitigation		\$2,000.00	35%	\$2,700.00			
Site Paving/Gravel		\$0.00	35%	\$0.00			
Landscaping/Grass		\$0.00	35%	\$0.00			
Standard Site Grounding		\$5,000.00	35%	\$6,750.00			
Mountain Top Grounding (XIT Rods)		\$0.00	35%	\$0.00			
Fencing		\$0.00	35%	\$0.00			
Site Cleanup - Demobilization		\$3,000.00	35%	\$4,050.00			
Tower							
Tower (Stamped Dwg's & Tower Steel)		\$0.00	35%	\$0.00			
Tower Delivery (Anchor Bolts Separate)		\$0.00	35%	\$0.00			
Existing tower demolition		\$0.00	35%	\$0.00			
Tower Upgrades/modifications		\$50,000.00	35%	\$67,500.00			
Foundation (Matt Type)		\$0.00	35%	\$0.00			
Foundation (Drilled Pier Caisson)		\$0.00	35%	\$0.00			
Erection		\$0.00	35%	\$0.00			
70 Ton Crane (Mob, Rental, Operation)		\$5,000.00	35%	\$6,750.00			
Ice Bridge (20-ft)		\$0.00	35%	\$0.00			
Grounding (Tower, Antenna & Lines)		\$0.00	35%	\$0.00			
Antenna and line work install (Included in Radio System Installation Cost)		\$0.00	35%	\$0.00			
Migration		\$10,000.00	35%	\$13,500.00			
Building							
Structure		\$0.00	35%	\$0.00			inc
Foundation		\$0.00	35%	\$0.00			
Installation of radio equipment		\$0.00	35%	\$0.00			
Installation of shelter		\$0.00	35%	\$0.00			
Crane		\$0.00	35%	\$0.00			
Fire Protection		\$0.00	35%	\$0.00			
Com Trench		\$0.00	35%	\$0.00			
Transformer Upgrade		\$3,500.00	35%	\$4,725.00			
Power to Building (from on site meter)		\$0.00	35%	\$0.00			
Mics Electrical Power Work		\$7,500.00	35%	\$10,125.00			
Permits							
Use Permit		\$0.00	35%	\$0.00			
Electrical Permit		\$500.00	35%	\$675.00			
Generator							
Generator/ Switch gear	1	\$0.00	35%	\$0.00			
Generator Pad		\$0.00	35%	\$0.00			
Fuel Tank (Standby in City)		\$0.00	35%	\$0.00			
Fuel Tank (Standby Mountain Top)		\$0.00	35%	\$0.00			
Fill Fuel Tank and Final Testing		\$0.00	35%	\$0.00			
Installation		\$0.00	35%	\$0.00			-
Not Included (separte spreadsheet)							
Land use and Building Permits							
Radio equipment and coax							
Consultants fees							

TOTAL: \$96,500.00 \$130,275.00 _____ :



Assumptions for Scenario #1

- Tower meets rev G after tower modifications
- (2) 6ft HP dishes
- (2) 800 MHz mast on new mounts
- Existing power supply
- Existing backup power

Scenarios

1. Existing King County site: reuse existing shelter, backup power and tower/rooftop unmodified. Add equipment racks and equipment to tower
2. Existing King County site: reuse existing shelter, backup power and tower structural modification required. Add equipment racks and equipment to tower.
3. (Lowland site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
3. (High site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
5. Existing King County site: new shelter due to lack of space, backup power and tower unmodified. Add equipment racks and equipment to tower
6. Existing King County site: reuse existing shelter, backup power, demo existing tower all new 180ft SS tower. Add equipment racks and equipment to tower.

Additional Assumptions:

- Site topography such that retaining walls and other site stabilization measures not required
- Sites have power and telco available. Dual prime generator scenario not included

King County P25 Phase 2 Radio System Cost Estimate

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Scenario #3

3. (Low land site) All new King County site compound (50x50) new shelter (10x 25), backup power and tower 180ft SS

Item	Qty	Sub-Total	MU	TOTAL	ACTUAL	TAX	SHIP/SPCL
Sitework							
Site Setup/ Mobilizations		\$5,000.00	35%	\$6,750.00			
Site Layout Staking		\$4,000.00	35%	\$5,400.00			
Clearing		\$3,000.00	35%	\$4,050.00			
Earthwork		\$2,000.00	35%	\$2,700.00			
Drainage scheme		\$4,000.00	35%	\$5,400.00			
Special Inspections		\$5,000.00	35%	\$6,750.00			
Road upgrade (Driveway - minor)		\$10,000.00	35%	\$13,500.00			
Road Upgrade (5-miles)		\$0.00	35%	\$0.00			
Noise Mitigation		\$2,000.00	35%	\$2,700.00			
Site Paving/Gravel		\$6,000.00	35%	\$8,100.00			
Landscaping/Grass		\$6,000.00	35%	\$8,100.00			
Standard Site Grounding		\$5,000.00	35%	\$6,750.00			
Mountain Top Grounding (XIT Rods)		\$0.00	35%	\$0.00			
Fencing		\$5,000.00	35%	\$6,750.00			
Site Cleanup - Demobilization		\$3,000.00	35%	\$4,050.00			
Tower							
Tower (Stamped Dwg's & Tower Steel)		\$95,000.00	35%	\$128,250.00			
Tower Delivery (Anchor Bolts Separate)		\$16,000.00	35%	\$21,600.00			
Existing tower demolition		\$0.00	35%	\$0.00			
Tower Upgrades/modifications		\$0.00	35%	\$0.00			
Foundation (Matt Type)		\$0.00	35%	\$0.00			
Foundation (Drilled Peer Caisson)		\$55,000.00	35%	\$74,250.00			
Erection		\$30,000.00	35%	\$40,500.00			
70 Ton Crane (Mob, Rental, Operat)		\$10,000.00	35%	\$13,500.00			
Ice Bridge (20-ft)		\$2,500.00	35%	\$3,375.00			
Grounding (Tower, Antenna & Lines)		\$5,000.00	35%	\$6,750.00			
Antenna and line work install (Included in Radio System Installation Cost)		\$0.00	35%	\$0.00			
Migration		\$10,000.00	35%	\$13,500.00			
Building							
Structure		\$56,000.00	35%	\$75,600.00			inc
Foundation		\$15,000.00	35%	\$20,250.00			
Installation of radio equipment		\$0.00	35%	\$0.00			
Installation of shelter		\$4,000.00	35%	\$5,400.00			
Crane		\$9,000.00	35%	\$12,150.00			
Fire Protection		\$0.00	35%	\$0.00			
Com Trench		\$10,000.00	35%	\$13,500.00			
Transformer Upgrade		\$3,500.00	35%	\$4,725.00			
Power to Building (from on site meter)		\$4,000.00	35%	\$5,400.00			
Mics Electrical Power Work		\$7,500.00	35%	\$10,125.00			
Permits							
Use Permit		\$0.00	35%	\$0.00			
Electrical Permit		\$500.00	35%	\$675.00			
Generator							
Generator/ Switch gear	1	\$40,000.00	35%	\$54,000.00			
Generator Pad		\$1,000.00	35%	\$1,350.00			
Fuel Tank (Standby in City)		\$1,500.00	35%	\$2,025.00			
Fuel Tank (Standby Mountain Top)		\$0.00	35%	\$0.00			
Fill Fuel Tank and Final Testing		\$4,500.00	35%	\$6,075.00			
Installation		\$2,000.00	35%	\$2,700.00			-
Not Included (separte spreadsheet)							
Land use and Building Permits							
Radio equipment and coax							
Consultants fees							

TOTAL: \$442,000.00 \$596,700.00 _____ :



Assumptions for Scenario #1

- Tower meets rev G
- (2) 6ft HP dishes
- (2) 800 MHz mast on new mounts
- Existing power supply
- Existing backup power
- Proposed 180ft SS tower
- 50x50 compound

Scenarios

1. Existing King County site: reuse existing shelter, backup power and tower/rooftop unmodified. Add equipment racks and equipment to tower
2. Existing King County site: reuse existing shelter, backup power and tower structural modification required. Add equipment racks and equipment to tower.
3. (Lowland site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
3. (High site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
5. Existing King County site: new shelter due to lack of space, backup power and tower unmodified. Add equipment racks and equipment to tower
6. Existing King County site: reuse existing shelter, backup power, demo existing tower all new 180ft SS tower. Add equipment racks and equipment to tower.

Additional Assumptions:

- Site topography such that retaining walls and other site stabilization measures not required
- Sites have power and telco available. Dual prime generator scenario not included

King County P25 Phase 2 Radio System Cost Estimate

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Scenario #4

4. (High site) All new King County site (50x 50), backup power and tower 180ft SS, road work required

Item	Qty	Sub-Total	MU	TOTAL	ACTUAL	TAX	SHIP/SPCL
Sitework							
Site Setup/ Mobilizations		\$5,000.00	35%	\$6,750.00			
Site Layout Staking		\$4,000.00	35%	\$5,400.00			
Clearing		\$3,000.00	35%	\$4,050.00			
Earthwork		\$2,000.00	35%	\$2,700.00			
Drainage scheme		\$4,000.00	35%	\$5,400.00			
Special Inspections		\$5,000.00	35%	\$6,750.00			
Road upgrade (Driveway - minor)		\$0.00	35%	\$0.00			
Road Upgrade (5-miles)		\$100,000.00	35%	\$135,000.00			
Noise Mitigation		\$2,000.00	35%	\$2,700.00			
Site Paving/Gravel		\$6,000.00	35%	\$8,100.00			
Landscaping/Grass		\$0.00	35%	\$0.00			
Standard Site Grounding		\$0.00	35%	\$0.00			
Mountain Top Grounding (XIT Rods)		\$15,000.00	35%	\$20,250.00			
Fencing		\$5,000.00	35%	\$6,750.00			
Site Cleanup - Demobilization		\$3,000.00	35%	\$4,050.00			
Tower							
Tower (Stamped Dwg's & Tower Steel)		\$95,000.00	35%	\$128,250.00			
Tower Delivery (Anchor Bolts Separate)		\$16,000.00	35%	\$21,600.00			
Existing tower demolition		\$0.00	35%	\$0.00			
Tower Upgrades/modifications		\$0.00	35%	\$0.00			
Foundation (Matt Type)		\$30,000.00	35%	\$40,500.00			
Foundation (Drilled Peer Caisson)		\$0.00	35%	\$0.00			
Erection		\$30,000.00	35%	\$40,500.00			
70 Ton Crane (Mob, Rental, Operat)		\$10,000.00	35%	\$13,500.00			
Ice Bridge (20-ft)		\$2,500.00	35%	\$3,375.00			
Grounding (Tower, Antenna & Lines)		\$5,000.00	35%	\$6,750.00			
Antenna and line work install (Included in Radio System Installation Cost)		\$0.00	35%	\$0.00			
Migration		\$10,000.00	35%	\$13,500.00			
Building							
Structure		\$80,000.00	35%	\$108,000.00			inc
Foundation		\$15,000.00	35%	\$20,250.00			
Installation of radio equipment		\$0.00	35%	\$0.00			
Installation of shelter		\$4,000.00	35%	\$5,400.00			
Crane		\$15,000.00	35%	\$20,250.00			
Fire Protection		\$0.00	35%	\$0.00			
Com Trench		\$10,000.00	35%	\$13,500.00			
Transformer Upgrade		\$3,500.00	35%	\$4,725.00			
Power to Building (from on site meter)		\$4,000.00	35%	\$5,400.00			
Mics Electrical Power Work		\$7,500.00	35%	\$10,125.00			
Permits							
Use Permit		\$0.00	35%	\$0.00			
Electrical Permit		\$500.00	35%	\$675.00			
Generator							
Generator/ Switch gear	1	\$40,000.00	35%	\$54,000.00			
Generator Pad		\$1,000.00	35%	\$1,350.00			
Fuel Tank (Standby in City)		\$1,500.00	35%	\$2,025.00			
Fuel Tank (Standby Mountain Top)		\$4,500.00	35%	\$6,075.00			
Fill Fuel Tank and Final Testing		\$4,500.00	35%	\$6,075.00			
Installation		\$2,000.00	35%	\$2,700.00			-
Not Included (separte spreadsheet)							
Land use and Building Permits							
Radio equipment and coax							
Consultants fees							

TOTAL: \$545,500.00 \$736,425.00 _____ :



Assumptions for Scenario #4

- (2) 6ft HP dishes
- (2) 800 MHz mast on new mounts
- Existing power supply

Proposed 180ft SS tower
 50x50 compound

Scenarios

1. Existing King County site: reuse existing shelter, backup power and tower/rooftop unmodified. Add equipment racks and equipment to tower
2. Existing King County site: reuse existing shelter, backup power and tower structural modification required. Add equipment racks and equipment to tower.
3. (Lowland site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
3. (High site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
5. Existing King County site: new shelter due to lack of space, backup power and tower unmodified. Add equipment racks and equipment to tower
6. Existing King County site: reuse existing shelter, backup power, demo existing tower all new 180ft SS tower. Add equipment racks and equipment to tower.

Additional Assumptions:

Site topography such that retaining walls and other site stabilization measures not required

Sites have power and telco available. Dual prime generator scenario not included

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Scenario #5

5. Existing King County site - new shelter due to lack of space, backup power and tower unmodified. Added equipment racks and equipment to tower

Item	Qty	Sub-Total	MU	TOTAL	ACTUAL	TAX	SHIP/SPCL
Sitework							
Site Setup/ Mobilizations		\$5,000.00	35%	\$6,750.00			
Site Layout Staking		\$0.00	35%	\$0.00			
Clearing		\$0.00	35%	\$0.00			
Earthwork		\$2,000.00	35%	\$2,700.00			
Drainage scheme		\$0.00	35%	\$0.00			
Special Inspections		\$5,000.00	35%	\$6,750.00			
Road upgrade (Driveway - minor)		\$0.00	35%	\$0.00			
Road Upgrade (5-miles)		\$0.00	35%	\$0.00			
Noise Mitigation		\$2,000.00	35%	\$2,700.00			
Site Paving/Gravel		\$0.00	35%	\$0.00			
Landscaping/Grass		\$6,000.00	35%	\$8,100.00			
Standard Site Grounding		\$5,000.00	35%	\$6,750.00			
Mountain Top Grounding (XIT Rods)		\$0.00	35%	\$0.00			
Fencing		\$5,000.00	35%	\$6,750.00			
Site Cleanup - Demobilization		\$3,000.00	35%	\$4,050.00			
Tower							
Tower (Stamped Dwg's & Tower Steel)		\$0.00	35%	\$0.00			
Tower Delivery (Anchor Bolts Separate)		\$0.00	35%	\$0.00			
Existing tower demolition		\$0.00	35%	\$0.00			
Tower Upgrades/modifications		\$0.00	35%	\$0.00			
Foundation (Matt Type)		\$0.00	35%	\$0.00			
Foundation (Drilled Peer Caisson)		\$0.00	35%	\$0.00			
Erection		\$0.00	35%	\$0.00			
70 Ton Crane (Mob, Rental, Operat)		\$0.00	35%	\$0.00			
Ice Bridge (20-ft)		\$2,500.00	35%	\$3,375.00			
Grounding (Tower, Antenna & Lines)		\$0.00	35%	\$0.00			
Antenna and line work install (Included in Radio System Installation Cost)		\$0.00	35%	\$0.00			
Migration		\$10,000.00	35%	\$13,500.00			
Building							
Structure		\$56,000.00	35%	\$75,600.00			inc
Foundation		\$15,000.00	35%	\$20,250.00			
Installation of radio equipment		\$0.00	35%	\$0.00			
Installation of shelter		\$4,000.00	35%	\$5,400.00			
Crane		\$9,000.00	35%	\$12,150.00			
Fire Protection		\$0.00	35%	\$0.00			
Com Trench		\$10,000.00	35%	\$13,500.00			
Transformer Upgrade		\$3,500.00	35%	\$4,725.00			
Power to Building (from on site meter)		\$4,000.00	35%	\$5,400.00			
Mics Electrical Power Work		\$7,500.00	35%	\$10,125.00			
Permits							
Use Permit		\$0.00	35%	\$0.00			
Electrical Permit		\$500.00	35%	\$675.00			
Generator							
Generator/ Switch gear	1	\$0.00	35%	\$0.00			
Generator Pad		\$0.00	35%	\$0.00			
Fuel Tank (Standby in City)		\$0.00	35%	\$0.00			
Fuel Tank (Standby Mountain Top)		\$0.00	35%	\$0.00			
Fill Fuel Tank and Final Testing		\$0.00	35%	\$0.00			
Installation		\$0.00	35%	\$0.00			-
Not Included (separte spreadsheet)							
Land use and Building Permits							
Radio equipment and coax							
Consultants fees							

TOTAL: \$155,000.00 \$209,250.00 _____ :



Assumptions for Scenario #5

- Tower meets rev G
- (2) 6ft HP dishes
- (2) 800 MHz mast on new mounts
- Existing power supply
- Existing backup power
- new shelter

Scenarios

1. Existing King County site: reuse existing shelter, backup power and tower/rooftop unmodified. Add equipment racks and equipment to tower
2. Existing King County site: reuse existing shelter, backup power and tower structural modification required. Add equipment racks and equipment to tower.
3. (Lowland site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
3. (High site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
5. Existing King County site: new shelter due to lack of space, backup power and tower unmodified. Add equipment racks and equipment to tower
6. Existing King County site: reuse existing shelter, backup power, demo existing tower all new 180ft SS tower. Add equipment racks and equipment to tower.

Additional Assumptions:

- Site topography such that retaining walls and other site stabilization measures not required
- Sites have power and telco available. Dual prime generator scenario not included

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Scenario #6

6. Existing King County site - reuse existing shelter, backup power, demo existing tower all new 180ft SS tower. Added equipment racks and equipment to tower.

Item	Qty	Sub-Total	MU	TOTAL	ACTUAL	TAX	SHIP/SPCL
Sitework							
Site Setup/ Mobilizations		\$5,000.00	35%	\$6,750.00			
Site Layout Staking		\$4,000.00	35%	\$5,400.00			
Clearing		\$3,000.00	35%	\$4,050.00			
Earthwork		\$2,000.00	35%	\$2,700.00			
Drainage scheme		\$4,000.00	35%	\$5,400.00			
Special Inspections		\$5,000.00	35%	\$6,750.00			
Road upgrade (Driveway - minor)		\$10,000.00	35%	\$13,500.00			
Road Upgrade (5-miles)		\$0.00	35%	\$0.00			
Noise Mitigation		\$2,000.00	35%	\$2,700.00			
Site Paving/Gravel		\$6,000.00	35%	\$8,100.00			
Landscaping/Grass		\$6,000.00	35%	\$8,100.00			
Standard Site Grounding		\$5,000.00	35%	\$6,750.00			
Mountain Top Grounding (XIT Rods)		\$0.00	35%	\$0.00			
Fencing		\$5,000.00	35%	\$6,750.00			
Site Cleanup - Demobilization		\$3,000.00	35%	\$4,050.00			
Tower							
Tower (Stamped Dwg's & Tower Steel)		\$95,000.00	35%	\$128,250.00			
Tower Delivery (Anchor Bolts Separate)		\$16,000.00	35%	\$21,600.00			
Existing tower demolition		\$40,000.00	35%	\$54,000.00			
Tower Upgrades/modifications		\$0.00	35%	\$0.00			
Foundation (Matt Type)		\$0.00	35%	\$0.00			
Foundation (Drilled Peer Caisson)		\$55,000.00	35%	\$74,250.00			
Erection		\$30,000.00	35%	\$40,500.00			
70 Ton Crane (Mob, Rental, Operat)		\$5,000.00	35%	\$6,750.00			
Ice Bridge (20-ft)		\$2,500.00	35%	\$3,375.00			
Grounding (Tower, Antenna & Lines)		\$5,000.00	35%	\$6,750.00			
Antenna and line work install (Included in Radio System Installation Cost)		\$0.00	35%	\$0.00			
Migration		\$10,000.00	35%	\$13,500.00			
Building							
Structure		\$0.00	35%	\$0.00			inc
Foundation		\$0.00	35%	\$0.00			
Installation of radio equipment		\$0.00	35%	\$0.00			
Installation of shelter		\$0.00	35%	\$0.00			
Crane		\$0.00	35%	\$0.00			
Fire Protection		\$0.00	35%	\$0.00			
Com Trench		\$10,000.00	35%	\$13,500.00			
Transformer Upgrade		\$3,500.00	35%	\$4,725.00			
Power to Building (from on site meter)		\$4,000.00	35%	\$5,400.00			
Mics Electrical Power Work		\$7,500.00	35%	\$10,125.00			
Permits							
Use Permit		\$0.00	35%	\$0.00			
Electrical Permit		\$500.00	35%	\$675.00			
Generator							
Generator/ Switch gear	1	\$0.00	35%	\$0.00			
Generator Pad		\$0.00	35%	\$0.00			
Fuel Tank (Standby in City)		\$0.00	35%	\$0.00			
Fuel Tank (Standby Mountain Top)		\$0.00	35%	\$0.00			
Fill Fuel Tank and Final Testing		\$0.00	35%	\$0.00			
Installation		\$0.00	35%	\$0.00			-
Not Included (separte spreadsheet)							
Land use and Building Permits							
Radio equipment and coax							
Consultants fees							

TOTAL: \$344,000.00 \$464,400.00 _____ :



Assumptions for Scenario #6

- Tower meets rev G
- (2) 6ft HP dishes
- (2) 800 MHz mast on new mounts
- Existing power supply
- Existing backup power
- Proposed 180ft SS tower
- 50x50 compound

Scenarios

1. Existing King County site: reuse existing shelter, backup power and tower/rooftop unmodified. Add equipment racks and equipment to tower
2. Existing King County site: reuse existing shelter, backup power and tower structural modification required. Add equipment racks and equipment to tower.
3. (Lowland site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
3. (High site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
5. Existing King County site: new shelter due to lack of space, backup power and tower unmodified. Add equipment racks and equipment to tower
6. Existing King County site: reuse existing shelter, backup power, demo existing tower all new 180ft SS tower. Add equipment racks and equipment to tower.

Additional Assumptions:

Site topography such that retaining walls and other site stabilization measures not required

Sites have power and telco available. Dual prime generator scenario not included

King County P25 Phase 2 Radio System Cost Estimate

1/13/2012

Scenario #1

1. Existing King County site reuse existing shelter, backup power and tower unmodified. Added equipment racks and equipment to tower. Building Permit Only; no land use required

Consultant	Towers etc			ES A&E			Survey			Civil			Legal/Site Acquisition			Environmental/Permitting			Electrical/RF design Management			Geotech			MU	TOTAL
Design	sub total	rate	hrs	sub total	rate	hrs	sub total	rate	hrs	sub total	rate	hrs	sub total	rate	hrs	sub total	rate	hrs	sub total	rate	hrs	sub total	rate	hrs		
Engineering Consultant project management	\$0	\$150	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$16,000	\$200	80	\$0	\$100	0	15%	\$18,400
Site Visits	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$600	\$100	6	\$0	\$100	0	15%	\$1,840
Site Feasibility Study	\$0	\$100	0	\$1,600	\$100	16	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,840
Site Visits (Sub Contractors)	\$0	\$100	0	\$800	\$100	8	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$920
Lease Exhibit Drawings	\$0	\$100	0	\$800	\$100	8	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$920
Title Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Property Survey (Site w/ 250ft of Road)	\$0	\$100	0	\$0	\$100	0	\$3,500	\$100	35	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$4,025
Additional Road Survey (250ft to 2000ft)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Survey Coordination	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	10	\$0	\$100	0	15%	\$0
NIER Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$5,000	\$200	25	\$0	\$100	0	15%	\$5,750
Intermod Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$16,000	\$200	80	\$0	\$100	0	15%	\$18,400
Noise Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Civil (Target Drainage)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Structural Tower Analysis	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
Structural Existing Tower Inspection	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
Structural Tower Upgrade design	\$3,000	\$100	30	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$3,450
Geotechnical	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$5,500	\$100	55	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$6,325
Project Design	\$500	\$100	5	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$575
Land Use Drawings	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Building Permit Drawings	\$0	\$100	0	\$6,000	\$100	60	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$6,900
Bid Drawings	\$0	\$100	0	\$1,800	\$100	18	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$3,220
Construction Drawings	\$0	\$100	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,725
As built Drawings	\$0	\$100	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,725
Landscape Drawings	\$0	\$100	0	\$2,500	\$100	25	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,875
Grounding drawings	\$0	\$100	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,725
Electrical drawings (one line)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$5,500	\$100	55	\$0	\$100	0	15%	\$6,325
Bid Spec Coordination	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Elect designs and spec	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Mech designs & specs	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Building Specs	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Tower Specs	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
FAA/FCC Filings (Tower, Microwave & Land Mobile)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$10,500	\$200	52.5	\$0	\$100	0	15%	\$12,075
Owner supplied equipment bids (racks gens etc)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Environmental Site Assessment (phase I)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Road Design	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Construction Staking	\$0	\$100	0	\$100	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Construction Coordination	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,500	\$100	25	\$0	\$100	0	\$0	\$100	0	15%	\$2,875
Permit Applications																										\$0
LU - General meetings paperwork etc	\$1,000	\$100	10	\$1,200	\$100	12	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,530
Pre-application Meetings	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Public Notice Board	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	5	\$0	\$100	0	15%	\$0
BP - General meetings paperwork etc	\$1,000	\$100	10	\$1,200	\$100	12	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$6,300	\$100	63	\$0	\$100	0	\$0	\$100	0	15%	\$9,775
SEPA	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
SHPO (FCC 620/622)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$7,100	\$100	71	\$0	\$100	0	\$0	\$100	0	15%	\$8,165
NEPA	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,700	\$100	27	\$0	\$100	0	\$0	\$100	0	15%	\$3,105
Public Hearings	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Balloon Test	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Photos Sims	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Building Permit Management	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$500	\$100	5	\$0	\$100	0	\$0	\$100	0	15%	\$575
Project Management	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Bids and Constuction																										\$0
Construction Admin	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	15%	\$3,450
Bid Management	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$10,000	\$100	100	\$0	\$100	0	\$0	\$100	0	15%	\$11,500
Construction Site visits	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10								

King County P25 Phase 2 Radio System Cost Estimate

1/13/2012

Lease/ Lease Support																							
Purchase Land	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$0	\$100	0	\$0	\$100	0	0%	\$0
Lease 50x 50 plot	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$0	\$100	0	\$0	\$100	0	0%	\$0
New Lease/Lease Revision/Admin	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$10,000	\$100	100	\$0	\$100	0	0%	\$10,000
																						\$10,000	
Permit Fees																							
Permit Fees - Pre-Application	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,500	\$0	0	\$1,500	\$100	15	\$0	\$100	0	0%	\$3,000
Permit Fees LU	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$0	\$100	0	\$0	\$100	0	0%	\$0
Permit Fees BP	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$15,000	\$0	0	\$800	\$100	8	\$0	\$100	0	0%	\$15,800
Permit Fees - Demo	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$250	\$0	0	\$0	\$100	0	\$0	\$100	0	0%	\$250
																						\$19,050	
Not Included																							
Wild Life Study																							
RF designs etc (H&D) separate estimate																							
Critical Slopes																							

Scenarios

- Existing King County site: reuse existing shelter, backup power and tower/rooftop unmodified. Add equipment racks and equipment to tower
- Existing King County site: reuse existing shelter, backup power and tower structural modification required. Add equipment racks and equipment to tower.
- (Lowland site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
- (High site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
- Existing King County site: new shelter due to lack of space, backup power and tower unmodified. Add equipment racks and equipment to tower
- Existing King County site: reuse existing shelter, backup power, demo existing tower all new 180ft SS tower. Add equipment racks and equipment to tower.

Additional Assumptions:

Site topography such that retaining walls and other site stabilization measures not required

Sites have power and telco available. Dual prime generator scenario not included

King County P25 Phase 2 Radio System Cost Estimate

1/13/2012

Scenario #2

2. Existing King County site reuse existing shelter, backup power and tower structural modification required. Added equipment racks and equipment to tower. Building permit only

Consultant	Towers etc			ES A&E			Survey			Civil			Legal/Site Acquisition			Enviromental/Permitting			Electrical/RF design Management			Geotech			MU	TOTAL
Design	sub total	rate	hrs	sub total	rate	hrs																				
Engineering Consultant project management	\$0	\$150	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$16,000	\$200	80	\$0	\$100	0	0%	\$16,000
Site Visits	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$500	\$100	5	\$0	\$100	0	\$0	\$100	0	0%	\$1,500
Site Feasibility Study	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Site Visits (Sub Contractors - bid walk)	\$0	\$100	0	\$800	\$100	8	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$500	\$100	5	\$0	\$100	0	\$0	\$100	0	15%	\$1,495
Lease Exhibit Drawings	\$0	\$100	0	\$800	\$100	8	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$920
Title Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Property Survey (Site w/ 250ft of Road)	\$0	\$100	0	\$3,500	\$100	35	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$4,025
Additional Road Survey (250ft to 2000ft)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Survey Coordination	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
NIER Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$5,000	\$200	25	\$0	\$100	0	15%	\$5,750
Intermod Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$16,000	\$200	80	\$0	\$100	0	15%	\$18,400
Noise Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
																										\$0
Civil (Target Drainage)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Structural Tower Analysis	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
Structural Existing Tower Inspection	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
Structural Tower Upgrade design	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
Geotechnical	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$5,500	\$100	55	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$7,475
Project Design	\$3,000	\$100	30	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$3,450
Land Use Drawings	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$7,050	\$100	70.5	\$0	\$100	0	\$0	\$100	0	15%	\$8,108
Building Permit Drawings	\$0	\$100	0	\$6,000	\$100	60	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$6,900
Bid Drawings	\$0	\$100	0	\$1,800	\$100	18	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$6,350	\$100	63.5	\$0	\$100	0	\$0	\$100	0	15%	\$9,373
Construction Drawings	\$0	\$100	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,725
As built Drawings	\$0	\$100	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$300	\$100	3	\$0	\$100	0	\$0	\$100	0	15%	\$2,070
Landscape Drawings	\$0	\$100	0	\$2,500	\$100	25	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$300	\$100	3	\$0	\$100	0	\$0	\$100	0	15%	\$3,220
																										\$0
Grounding drawings	\$0	\$100	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,725
Electrical drawings (one line)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$5,500	\$100	55	\$0	\$100	0	15%	\$7,475
Bid Spec Coordination	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Elec designs and spec	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$500	\$100	5	\$0	\$100	0	\$0	\$100	0	15%	\$575
Mech designs and spec	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$500	\$100	5	\$0	\$100	0	\$0	\$100	0	15%	\$575
Building Specs	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Tower Specs	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
FAA/FCC Filings (Tower, Microwave & Land Mobile)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$10,500	\$200	52.5	\$0	\$100	0	15%	\$12,075
Owner supplied equipment bids (racks gens etc)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Environmental Site Assessment (phase I)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Road Design	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Construction Staking	\$0	\$100	0	\$100	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Construction Coordination	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,500	\$100	25	\$0	\$100	0	\$0	\$100	0	15%	\$2,875
Permit Applications																										\$0
LU -General meetings paperwork etc	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Pre-application Meetings paperwork etc	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,200	\$100	22	\$0	\$100	0	\$0	\$100	0	15%	\$2,530
Public Notice Board	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$350	\$100	3.5	\$0	\$100	0	\$0	\$100	0	15%	\$403
BP -General meetings paperwork etc	\$500	\$100	5	\$500	\$100	5	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$6,300	\$100	63	\$0	\$100	0	\$0	\$100	0	15%	\$8,395
SEPA	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
SHPO (FCC 612)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$7,100	\$100	71	\$0	\$100	0	\$0	\$100	0	15%	\$8,165
NEPA	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,700	\$100	27	\$0	\$100	0	\$0	\$100	0	15%	\$3,105
Public Hearings	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$300	\$100	3	\$0	\$100	0	\$0	\$100	0	15%	\$345
Balloon Test	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Photos Sims	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Building Permit Management	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$500	\$100	5	\$0	\$100	0	\$0	\$100	0	15%	\$575
Project Management	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Bids and Constuction																										\$0
Construction Admin	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	15%	\$3,450
Bid Management	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100															

King County P25 Phase 2 Radio System Cost Estimate

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Lease/ Lease Support																							
Purchase Land	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$0	\$100	0	\$0	\$100	0	0%	\$0
Lease 50x 50 plot	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$0	\$100	0	\$0	\$100	0	0%	\$0
New Lease/Lease Revision/Admin	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$0	\$100	0	\$0	\$100	0	0%	\$0
																							\$0
Permit Fees																							
Permit Fees - Pre-Application	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$1,500	\$100	15	\$0	\$100	0	0%	\$1,500
Permit Fees LU	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$4,000	\$100	40	\$0	\$100	0	0%	\$4,000
Permit Fees BP	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$800	\$100	8	\$0	\$100	0	0%	\$800
Permit Fees Demo	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$0	\$100	0	\$0	\$100	0	0%	\$0
																							\$6,300
Not Included																							
Wild Life Study																							
RF designs etc (H&D) separate estimate																							
Critical Slopes																							

Scenarios

- Existing King County site: reuse existing shelter, backup power and tower/rooftop unmodified. Add equipment racks and equipment to tower
- Existing King County site: reuse existing shelter, backup power and tower structural modification required. Add equipment racks and equipment to tower.
- (Lowland site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
- (High site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
- Existing King County site: new shelter due to lack of space, backup power and tower unmodified. Add equipment racks and equipment to tower
- Existing King County site: reuse existing shelter, backup power, demo existing tower all new 180ft SS tower. Add equipment racks and equipment to tower.

Additional Assumptions:

Site topography such that retaining walls and other site stabilization measures not required

Sites have power and telco available. Dual prime generator scenario not included

King County P25 Phase 2 Radio System Cost Estimate

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Scenario #3

3. (Low land site) All new King County site new shelter (50x 50), backup power and tower 180ft SS. Landuse and builing permit. Site zoning allows tower construction

Consultant	Towers etc			ES A&E			Survey			Civil			Legal/Site Acquisition			Enviromental/Permitting			Electrical/RF design Management			Geotech			MU	TOTAL
Design	sub total	rate	hrs	sub total	rate	hrs																				
Engineering Consultant project management	\$0	\$150	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$32,000	\$200	160	\$0	\$100	0	0%	\$32,000
Site Visits	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$500	\$100	5	\$0	\$100	0	\$0	\$100	0	0%	\$1,500
Site Feasibility Study	\$0	\$100	0	\$1,600	\$100	16	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,840
Site Visits (Sub Contractors)	\$0	\$100	0	\$800	\$100	8	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$920
Lease Exhibt Drawings	\$0	\$100	0	\$800	\$100	8	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$920
Title Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$700	\$100	7	\$0	\$100	0	\$0	\$100	0	15%	\$805
Property Survey (Site w/ 250ft of Road)	\$0	\$100	0	\$0	\$100	0	\$5,000	\$100	50	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$5,750
Additional Road Survey (250ft to 2000ft)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Survey Coordination	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
NIER Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$5,000	\$200	25	\$0	\$100	0	15%	\$5,750
Intermod Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$16,000	\$200	80	\$0	\$100	0	15%	\$18,400
Noise Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,000	\$100	20	\$0	\$100	0	\$500	\$100	5	\$0	\$100	0	\$0	\$100	0	15%	\$2,875
Civil (Target Drainage)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$4,000	\$100	40	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$4,600
Structural Tower Analysis	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Structural Existing Tower Inspection	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Structural Tower Upgrade design	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Geotechnical	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$5,500	\$100	55	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$5,000	\$100	50	15%	\$13,225
Project Design	\$4,000	\$100	40	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$4,600
Land Use Drawings	\$0	\$100	0	\$4,500	\$100	45	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$7,050	\$100	70.5	\$0	\$100	0	\$0	\$100	0	15%	\$13,283
Building Permit Drawings	\$0	\$100	0	\$6,000	\$100	60	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$6,900
Bid Drawings	\$0	\$100	0	\$1,800	\$100	18	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$6,350	\$100	63.5	\$0	\$100	0	\$0	\$100	0	15%	\$9,373
Construction Drawings	\$0	\$100	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,725
As built Drawings	\$0	\$100	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$3,300	\$100	33	\$0	\$100	0	\$0	\$100	0	15%	\$5,520
Landscape Drawings	\$0	\$100	0	\$2,500	\$100	25	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$300	\$100	3	\$0	\$100	0	\$0	\$100	0	15%	\$3,220
Grounding drawings	\$0	\$100	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,725
Electrical drawings (one line)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$5,500	\$100	55	\$0	\$100	0	15%	\$6,325
Bid Spec Coordination	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
Elec designs and spec	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Mech designs and spec	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Building Specs	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
Tower Specs	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
FAA/FCC Filings (Tower, Microwave & Land Mobile)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$10,500	\$200	52.5	\$0	\$100	0	15%	\$12,075
Owner supplied equipment bids (racks gens etc)	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Enviromental Site Assessment (phase I)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Road Design	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Contraction Staking	\$0	\$100	0	\$100	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Construction Coordination	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,500	\$100	25	\$0	\$100	0	\$0	\$100	0	15%	\$2,875
Permit Applications																										
BP - General meetings paperwork etc	\$2,000	\$100	20	\$1,200	\$100	12	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$6,300	\$100	63	\$0	\$100	0	\$0	\$100	0	15%	\$10,925
Pre-application Meetings	\$750	\$100	7.5	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,013
Public Notice Board	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
LU -General meetings paperwork etc	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$7,100	\$100	71	\$0	\$100	0	\$0	\$100	0	15%	\$8,165
SEPA	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
SHPO (FCC 612)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$7,100	\$100	71	\$0	\$100	0	\$0	\$100	0	15%	\$8,165
NEPA	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,700	\$100	27	\$0	\$100	0	\$0	\$100	0	15%	\$3,105
Public Hearings	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Balloon Test	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$3,600	\$100	36	\$0	\$100	0	\$0	\$100	0	15%	\$4,140
Photos Sims	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Building Permit Management	\$3,000	\$100	30	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$4,600
Project Management	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
Bids and Constuction																										
Construction Admin	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	15%	\$4,600
Bid Management	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$10,000	\$100	100	\$0	\$100	0	\$0	\$100	0	15%	\$11,500
Construction Site visits	\$2,000	\$100	20	\$0	\$100	0	\$0	\$																		

King County P25 Phase 2 Radio System Cost Estimate

1/13/2012

Lease/ Lease Support																								
Purchase Land	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$0	\$100	0	\$0	\$100	0	0%	\$0	
Lease 50x 50 plot	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$173,357	\$0	0	\$0	\$100	0	\$0	\$100	0	0%	\$173,357	
New Lease/Lease Revision/Admin	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$10,000	\$100	100	\$0	\$100	0	0%	\$10,000	
																							\$183,357	
Permit Fees																								
Permit Fees Pre-Application	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$25,000	\$0	0	\$1,500	\$100	15	\$0	\$100	0	0%	\$26,500	
Permit Fees LU	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$25,000	\$0	0	\$4,000	\$100	40	\$0	\$100	0	0%	\$29,000	
Permit Fees BP	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$25,000	\$0	0	\$1,800	\$100	18	\$0	\$100	0	0%	\$26,800	
Permit Fees - Demo	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$0	\$100	0	\$0	\$100	0	0%	\$0	
																							\$82,300	
Not Included																								
Wild Life Study																								
RF designs etc (H&D) separate estimate																								
Critical Slopes																								

Scenarios

- Existing King County site: reuse existing shelter, backup power and tower/rooftop unmodified. Add equipment racks and equipment to tower
- Existing King County site: reuse existing shelter, backup power and tower structural modification required. Add equipment racks and equipment to tower.
- (Lowland site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
- (High site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
- Existing King County site: new shelter due to lack of space, backup power and tower unmodified. Add equipment racks and equipment to tower
- Existing King County site: reuse existing shelter, backup power, demo existing tower all new 180ft SS tower. Add equipment racks and equipment to tower.

Additional Assumptions:

Site topography such that retaining walls and other site stabilization measures not required

Sites have power and telco available. Dual prime generator scenario not included

King County P25 Phase 2 Radio System Cost Estimate

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Scenario #4

4. (High site) All new King County site compound (50x50) new shelter (10x 25), backup power and tower 180ft SS, road work required. Landuse and builing permit. Site zoning allows tower construction

Consultant	Towers etc			ES A&E			Survey			Civil			Legal/Site Acquisition			Enviromental/Permitting			Electrical/RF design Management			Geotech			MU	TOTAL
Design	sub total	rate	hrs	sub total	rate	hrs																				
Engineering Consultant project management	\$0	\$150	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$32,000	\$200	160	\$0	\$100	0	0%	\$32,000
Site Visits	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	0%	\$1,000
Site Feasibility Study	\$0	\$100	0	\$1,600	\$100	16	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,840
Site Visits (Sub Contractors)	\$0	\$100	0	\$800	\$100	8	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$920
Lease Exhibit Drawings	\$0	\$100	0	\$800	\$100	8	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$920
Title Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$700	\$100	7	\$0	\$100	0	\$0	\$100	0	15%	\$805
Property Survey (Site w/ 250ft of Road)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Additional Road Survey (250ft to 2000ft)	\$0	\$100	0	\$0	\$100	0	\$8,000	\$100	80	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$9,200
Survey Coordination	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
NIER Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$5,000	\$200	25	\$0	\$100	0	15%	\$5,750
Intermod Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$16,000	\$200	80	\$0	\$100	0	15%	\$18,400
Noise Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
																										\$0
Civil (Target Drainage)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$4,000	\$100	40	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$4,600
Structural Tower Analysis	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Structural Existing Tower Inspection	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Structural Tower Upgrade design	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Geotechnical	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$5,500	\$100	55	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$5,000	\$100	50	15%	\$13,225
Project Design	\$4,000	\$100	40	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$4,600
Land Use Drawings	\$0	\$100	0	\$4,500	\$100	45	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$7,050	\$100	70.5	\$0	\$100	0	\$0	\$100	0	15%	\$13,283
Building Permit Drawings	\$0	\$100	0	\$6,000	\$100	60	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$6,900
Bid Drawings	\$0	\$100	0	\$1,800	\$100	18	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$6,350	\$100	63.5	\$0	\$100	0	\$0	\$100	0	15%	\$9,373
Construction Drawings	\$0	\$100	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,725
As built Drawings	\$0	\$100	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,725
Landscape Drawings	\$0	\$100	0	\$2,500	\$100	25	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,875
																										\$0
Grounding drawings	\$0	\$100	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,725
Electrical drawings (one line)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$5,500	\$100	55	\$0	\$100	0	15%	\$6,325
Bid Spec Coordination	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
Elec designs and spec	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Mech designs and spec	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Building Specs	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
Tower Specs	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
FAA/FCC Filings (Tower, Microwave & Land Mobile)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$10,500	\$200	52.5	\$0	\$100	0	15%	\$12,075
Owner supplied equipment bids (racks gens etc)	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Enviromental Site Assessment (phase I)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Road Design	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Contruaction Staking	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Construction Coordination	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,500	\$100	25	\$0	\$100	0	\$0	\$100	0	15%	\$2,875
Permit Applications																										\$0
BP - General meetings paperwork etc	\$2,000	\$100	20	\$1,200	\$100	12	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$6,300	\$100	63	\$0	\$100	0	\$0	\$100	0	15%	\$10,925
Pre-application Meetings	\$750	\$100	7.5	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,013
Public Notice Board	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
LU - General meetings paperwork etc	\$2,000	\$100	20	\$1,200	\$100	12	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$7,100	\$100	71	\$0	\$100	0	\$0	\$100	0	15%	\$11,845
SEPA	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
SHPO (FCC 612)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$7,100	\$100	71	\$0	\$100	0	\$0	\$100	0	15%	\$8,165
NEPA	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,650	\$100	26.5	\$0	\$100	0	\$0	\$100	0	15%	\$3,048
Public Hearings	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Balloon Test	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$3,600	\$100	36	\$0	\$100	0	\$0	\$100	0	15%	\$4,140
Photos Sims	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Building Permit Management	\$3,000	\$100	30	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$4,600
Project Management	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
Bids and Constuction																										\$0
Construction Admin	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	15%	

King County P25 Phase 2 Radio System Cost Estimate

1/13/2012

Lease/ Lease Support																								
Purchase Land	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$0	\$100	0	\$0	\$100	0	0%	\$0	
Lease 50x 50 plot	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$173,357	\$0	0	\$0	\$100	0	\$0	\$100	0	0%	\$173,357	
New Lease/Lease Revision/Admin	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$10,000	\$0	0	\$2,500	\$100	25	\$0	\$100	0	0%	\$12,500	
																							\$185,857	
Permit Fees																								
Permit Fees Pre-Application	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$25,000	\$0	0	\$1,500	\$100	15	\$0	\$100	0	0%	\$26,500	
Permit Fees LU	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$25,000	\$0	0	\$4,000	\$100	40	\$0	\$100	0	0%	\$29,000	
Permit Fees BP	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$25,000	\$0	0	\$1,800	\$100	18	\$0	\$100	0	0%	\$26,800	
Permit Fees - Demo	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$0	\$100	0	\$0	\$100	0	0%	\$0	
																							\$82,300	
Not Included																								
Wild Life Study																								
RF designs etc (H&D) separate estimate																								
Critical Slopes																								

Scenarios

- Existing King County site: reuse existing shelter, backup power and tower/rooftop unmodified. Add equipment racks and equipment to tower
- Existing King County site: reuse existing shelter, backup power and tower structural modification required. Add equipment racks and equipment to tower.
- (Lowland site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
- (High site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
- Existing King County site: new shelter due to lack of space, backup power and tower unmodified. Add equipment racks and equipment to tower
- Existing King County site: reuse existing shelter, backup power, demo existing tower all new 180ft SS tower. Add equipment racks and equipment to tower.

Additional Assumptions:

Site topography such that retaining walls and other site stabilization measures not required

Sites have power and telco available. Dual prime generator scenario not included

King County P25 Phase 2 Radio System Cost Estimate

1/13/2012

Scenario #5

5. Existing King County site new shelter due to lack of space, backup power and tower unmodified. Added equipment racks and equipment to tower . Land use and building permit required.

Consultant	Towers etc			ES A&E			Survey			Civil			Legal/Site Acquisition			Environmental/Permitting			Electrical/RF design Management			Geotech			MU	TOTAL
Design	sub total	rate	hrs	sub total	rate	hrs																				
Engineering Consultant project management	\$0	\$150	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$32,000	\$200	160	\$0	\$100	0	0%	\$32,000
Site Visits	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	0%	\$1,000
Site Feasibility Study	\$0	\$100	0	\$1,600	\$100	16	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,840
Site Visits (Sub Contractors)	\$0	\$100	0	\$800	\$100	8	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$920
Lease Exhibit Drawings	\$0	\$100	0	\$800	\$100	8	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$920
Title Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Property Survey (Site w/ 250ft of Road)	\$0	\$100	0	\$0	\$100	0	\$3,000	\$100	30	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$4,600
Additional Road Survey (250ft to 2000ft)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Survey Coordination	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$700	\$100	7	\$0	\$100	0	\$0	\$100	0	15%	\$805
NIER Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$5,000	\$200	25	\$0	\$100	0	15%	\$5,750
Intermod Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$16,000	\$200	80	\$0	\$100	0	15%	\$18,400
Noise Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Civil (Target Drainage)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Structural Tower Analysis	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
Structural Existing Tower Inspection	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
Structural Tower Upgrade design	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
Geotechnical	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$5,500	\$100	55	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$7,475
Project Design	\$3,000	\$100	30	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$3,450
Land Use Drawings	\$0	\$100	0	\$4,500	\$100	45	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$7,050	\$100	70.5	\$0	\$100	0	\$0	\$100	0	15%	\$13,283
Building Permit Drawings	\$0	\$100	0	\$6,000	\$100	60	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$6,900
Bid Drawings	\$0	\$100	0	\$1,800	\$100	18	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$6,350	\$100	63.5	\$0	\$100	0	\$0	\$100	0	15%	\$9,373
Construction Drawings	\$0	\$100	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,725
As built Drawings	\$0	\$100	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,725
Landscape Drawings	\$0	\$100	0	\$2,500	\$100	25	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,875
Grounding drawings	\$0	\$100	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,725
Electrical drawings (one line)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$5,500	\$100	55	\$0	\$100	0	15%	\$6,325
Bid Spec Coordination	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Elec designs and spec	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Mech designs and spec	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Building Specs	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
Tower Specs	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
FAA/FCC Filings (Tower, Microwave & Land Mobile)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$10,500	\$200	52.5	\$0	\$100	0	15%	\$12,075
Owner supplied equipment bids (racks gens etc)	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Environmental Site Assessment (phase I)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Road Design	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Construction Staking	\$0	\$100	0	\$100	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Construction Coordination	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,500	\$100	25	\$0	\$100	0	\$0	\$100	0	15%	\$2,875
Permit Applications																										
BP -General meetings paperwork etc	\$2,000	\$100	20	\$1,200	\$100	12	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$6,300	\$100	63	\$0	\$100	0	\$0	\$100	0	15%	\$10,925
Pre-application Meetings	\$750	\$100	7.5	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,013
Public Notice Board	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
LU - General meetings paperwork etc	\$2,000	\$100	20	\$1,200	\$100	12	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$7,100	\$100	71	\$0	\$100	0	\$0	\$100	0	15%	\$11,845
SEPA	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
SHPO (FCC 612)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$7,100	\$100	71	\$0	\$100	0	\$0	\$100	0	15%	\$8,165
NEPA	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,650	\$100	26.5	\$0	\$100	0	\$0	\$100	0	15%	\$3,048
Public Hearings	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Balloon Test	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Photos Sims	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Building Permit Management	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$500	\$100	5	\$0	\$100	0	\$0	\$100	0	15%	\$1,725
Project Management	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Bids and Constuction																										
Construction Admin	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	15%	\$3,450
Bid Management	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$10,000	\$100	100	\$0	\$100	0	\$0	\$100	0	15%	\$11,500
Construction Site visits	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,0										

King County P25 Phase 2 Radio System Cost Estimate

1/13/2012

Lease/ Lease Support																										
Purchase Land	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	0%	\$0
Lease 50x 50 plot	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$173,357	\$0	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	0%	\$173,357
New Lease/Lease Revision/Admin	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$10,000	\$0	0	\$2,500	\$100	25	\$0	\$100	0	\$0	\$100	0	0%	\$12,500
																							\$185,857			
Permit Fees																										
Permit Fees - Pre-Application	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$25,000	\$0	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	0%	\$26,500
Permit Fees LU	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$4,000	\$100	40	\$0	\$100	0	\$0	\$100	0	0%	\$4,000
Permit Fees BP	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$25,000	\$0	0	\$800	\$100	8	\$0	\$100	0	\$0	\$100	0	0%	\$25,800
Permit Fees - Demo	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	0%	\$0
																							\$56,300			
Not Included																										
Wild Life Study																										
RF designs etc (H&D) separate estimate																										
Critical Slopes																										

Scenarios

- Existing King County site: reuse existing shelter, backup power and tower/rooftop unmodified. Add equipment racks and equipment to tower
- Existing King County site: reuse existing shelter, backup power and tower structural modification required. Add equipment racks and equipment to tower.
- (Lowland site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
- (High site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
- Existing King County site: new shelter due to lack of space, backup power and tower unmodified. Add equipment racks and equipment to tower
- Existing King County site: reuse existing shelter, backup power, demo existing tower all new 180ft SS tower. Add equipment racks and equipment to tower.

Additional Assumptions:

Site topography such that retaining walls and other site stabilization measures not required

Sites have power and telco available. Dual prime generator scenario not included

King County P25 Phase 2 Radio System Cost Estimate

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Scenario #6

6. Existing King County site reuse existing shelter, backup power, demo existing tower allnew 180ft SS tower. Added equipment racks and equipment to tower. Land use and building permit required. Land assumed to be zoned for tower.

Consultant	Towers etc			ES A&E			Survey			Civil			Legal/Site Acquisition			Enviromental/Permitting			Electrical/RF design Management			Geotech			MU	TOTAL
Design	sub total	rate	hrs	sub total	rate	hrs																				
Engineering Consultant project management	\$0	\$150	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$150	0	\$0	\$100	0	0%	\$0
Site Visits	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	0%	\$1,000
Site Feasibility Study	\$0	\$100	0	\$1,600	\$100	16	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,840
Site Visits (Sub Contractors)	\$0	\$100	0	\$800	\$100	8	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$920
Lease Exhibit Drawings	\$0	\$100	0	\$800	\$100	8	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$920
Title Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Property Survey (Site w/ 250ft of Road)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Additional Road Survey (250ft to 2000ft)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Survey Coordination	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$700	\$100	7	\$0	\$100	0	\$0	\$100	0	15%	\$805
NIER Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Intermod Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Noise Report	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
																										\$0
Civil (Target Drainage)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Structural Tower Analysis	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
Structural Existing Tower Inspection	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,300
Structural Tower Upgrade design	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Geotechnical	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$5,500	\$100	55	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$7,475
Project Design	\$4,000	\$100	40	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$4,600
Land Use Drawings	\$0	\$100	0	\$4,500	\$100	45	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$7,050	\$100	70.5	\$0	\$100	0	\$0	\$100	0	15%	\$13,283
Building Permit Drawings	\$0	\$100	0	\$6,000	\$100	60	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$6,900
Bid Drawings	\$0	\$100	0	\$1,800	\$100	18	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$6,350	\$100	63.5	\$0	\$100	0	\$0	\$100	0	15%	\$9,373
Construction Drawings	\$0	\$100	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,725
As built Drawings	\$0	\$100	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,725
Landscape Drawings	\$0	\$100	0	\$2,500	\$100	25	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,875
																										\$0
Grounding drawings	\$0	\$100	0	\$1,500	\$100	15	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,725
Electrical drawings (one line)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Bid Spec Coordination	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Elec designs and spec	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Mech designs and spec	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Building Specs	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Tower Specs	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
FAA/FCC Filings (Tower, Microwave & Land Mobile)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Owner supplied equipment bids (racks gens etc)	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Enviromental Site Assessment (phase I)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Road Design	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Contruction Staking	\$0	\$100	0	\$100	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Construction Coordination	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,500	\$100	25	\$0	\$100	0	\$0	\$100	0	15%	\$2,875
Permit Applications																										\$0
General meetings paperwork etc	\$2,000	\$100	20	\$1,200	\$100	12	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$3,680
Pre-application Meetings	\$750	\$100	7.5	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$2,013
Public Notice Board	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
LU - General meetings paperwork etc	\$2,000	\$100	20	\$1,200	\$100	12	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$7,100	\$100	71	\$0	\$100	0	\$0	\$100	0	15%	\$11,845
SEPA	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$7,100	\$100	71	\$0	\$100	0	\$0	\$100	0	15%	\$8,165
SHPO (FCC 612)	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,650	\$100	26.5	\$0	\$100	0	\$0	\$100	0	15%	\$3,048
NEPA	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Public Hearings	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Ballon Test	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$0
Photos Sims	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Building Permit Management	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$500	\$100	5	\$0	\$100	0	\$0	\$100	0	15%	\$1,725
Project Management	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	15%	\$1,150
Bids and Constuction																										\$0
Construction Admin	\$1,000	\$100	10	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$2,000	\$100	20	\$0	\$100	0	\$0	\$100	0	15%	\$3,450
Bid Management	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100												

King County P25 Phase 2 Radio System Cost Estimate

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Lease/ Lease Support																								
Purchase Land	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$0	\$100	0	\$0	\$100	0	0%	\$0	
Lease 50x 50 plot	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$86,678	\$0	0	\$0	\$100	0	\$0	\$100	0	0%	\$86,678	
New Lease/Lease Revision/Admin	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$10,000	\$0	0	\$2,500	\$100	25	\$0	\$100	0	0%	\$12,500	
																							\$99,178	
Permit Fees																								
Permit Fees Pre-Application	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$1,500	\$100	15	\$0	\$100	0	0%	\$1,500	
Permit Fees LU	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$25,000	\$0	0	\$4,000	\$100	40	\$0	\$100	0	0%	\$29,000	
Permit Fees BP	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$25,000	\$0	0	\$1,200	\$100	12	\$0	\$100	0	0%	\$26,200	
Permit Fees - Demo	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$100	0	\$0	\$0	0	\$500	\$100	5	\$0	\$100	0	0%	\$500	
																							\$57,200	
Not Included																								
Wild Life Study																								
RF designs etc (H&D) separate estimate																								
Critical Slopes																								

Scenarios

- Existing King County site: reuse existing shelter, backup power and tower/rooftop unmodified. Add equipment racks and equipment to tower
- Existing King County site: reuse existing shelter, backup power and tower structural modification required. Add equipment racks and equipment to tower.
- (Lowland site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
- (High site) All new King County site compound (50' x 50'), new shelter (10' x 25'), backup power and tower - 180ft SS
- Existing King County site: new shelter due to lack of space, backup power and tower unmodified. Add equipment racks and equipment to tower
- Existing King County site: reuse existing shelter, backup power, demo existing tower all new 180ft SS tower. Add equipment racks and equipment to tower.

Additional Assumptions:

Site topography such that retaining walls and other site stabilization measures not required

Sites have power and telco available. Dual prime generator scenario not included

Sheet 3 - King County P25 Radio System Site Equipment Cost Estimate

King County P25 Phase 2 Radio System Cost Estimate

King County P25 Radio System Cost Estimate Master Site, Prime Sites, and Remote Repeater Sites Site Distribution Assumptions

Site Category	Quantity	Estimated Equipment Cost Per Site	Total Equipment Cost Per Site Category
Master	2	\$ 1,250,000.00	\$ 2,500,000.00
Total Master Sites	2		\$ 2,500,000.00
Simulcast Prime Site - 800 MHz Urban Area Simulcast Systems	4	\$ 914,197.00	\$ 3,656,788.00
Simulcast Prime Site - 800 MHz Transportation Corridors ("HWYS")	3	\$ 524,197.00	\$ 1,572,591.00
Simulcast Prime Site - VHF/UHF Simulcast System	1	\$ 446,197.00	\$ 446,197.00
Total Simulcast Prime Sites	8		\$ 5,675,576.00
Transportation Corridor ("HWYS") Site - 800 MHz Only Site	6	\$ 532,547.96	\$ 3,195,287.76
Transportation Corridor ("HWYS") Site - 800 MHz/UHF/VHF Site	6	\$ 755,950.08	\$ 4,535,700.48
Urban Area 28-Channel Simulcast Site - 800 MHz Only	40	\$ 1,398,884.90	\$ 55,955,396.00
Urban Area 28-Channel Simulcast Site - With UHF/VHF	4	\$ 1,622,287.02	\$ 6,489,148.08
Total Remote Repeater Sites	56		\$ 70,175,532.32

King County P25 Phase 2 Radio System Cost Estimate

MASTER SITE

QUANTITY	MASTER SITE	UNIT PRICE	DISCOUNT	KC PRICE
1	MASTER SITE CONFIGURATION		0%	\$0.00
1	7.9 ZC/NM HW 24 SITES OR LESS	\$40,000.00	0%	\$40,000.00
1	7.9 REDUNDANT ZC HW 24 SITE OR LESS	\$40,000.00	0%	\$40,000.00
1	HIGH AVAILABILITY ZC LICENSE	\$10,000.00	0%	\$10,000.00
1	DUAL COMMON PLATFORM HARDWARE MAX 24 SITES		0%	\$0.00
1	STORAGE DEVICE		0%	\$0.00
1	WINDOWS SUPPLEMENTAL TRANS CONFIG		0%	\$0.00
58	P25 Phase 2 TDMA Operation site LICENSE (includes site-level Ph1 IVD license)		0%	\$0.00
1	P25 Phase 2 TDMA Operation (includes zone-level Ph1 IVD license)		0%	\$0.00
1	ANTI-VIRUS SERVICE (SERVERS)		0%	\$0.00
1	BASELINE BACK UP		0%	\$0.00
11	500 RADIO USER LICENSES	\$5,000.00	0%	\$55,000.00
6	MCC 7500 CONSOLE LICENSES (QTY 5)	\$5,000.00	0%	\$30,000.00
2	ANTI-VIRUS SERVICE	\$500.00	0%	\$1,000.00
1	SYMANTEC ENDPOINT PROTECTION V11.0 CORP ED LIC & MEDIA SINGLE COPY	\$75.00	0%	\$75.00
1	UNIFIED NETWORK CONFIGURATOR (UNC)	\$20,000.00	0%	\$20,000.00
1	USER CONFIGURATION MANAGER (UCM)	\$5,000.00	0%	\$5,000.00
1	UNIFIED EVENT MANAGER (UEM)	\$20,000.00	0%	\$20,000.00
1	EMAIL ALARM NOTIFICATIONS	\$5,000.00	0%	\$5,000.00
1	ZONEWATCH	\$20,000.00	0%	\$20,000.00
1	ZONE HISTORICAL REPORTS	\$5,000.00	0%	\$5,000.00
1	DYNAMIC REPORTS	\$8,000.00	0%	\$8,000.00
1	RADIO CONTROL MANAGER	\$15,000.00	0%	\$15,000.00
1	AFFILIATION USER REPORTS	\$7,000.00	0%	\$7,000.00
1	CERTIFIED NETWORK MANAGEMENT ASTRO 7.5/7.6/7.7/7.8-REPL BY DDN9977A		0%	\$0.00
1	DDN9977A REPL BY DDN9977A		0%	\$0.00
1	ASTRO 7.9 CLIENT APPLICATION SOFTWARE		0%	\$0.00
1	CRYSTAL REPORTS 2008 (VISTA COMPATIBLE:FOR A7.5 & BEYOND)	\$994.00	0%	\$994.00
1	19" LCD, BLACK, NON-TOUCH	\$1,520.00	0%	\$1,520.00
1	CERTIFIED KEYBOARD FOR RSD SERVERS AND WORKSTATIONS	\$42.00	0%	\$42.00
1	CERTIFIED OPTICAL WHEEL MOUSE FOR RSD SERVERS AND WORKSTATIONS	\$30.00	0%	\$30.00
1	2610-24 ETHERNET SWITCH	\$2,250.00	0%	\$2,250.00
1	S6000 MNR MULTI-PROTOCOL ROUTER	\$15,995.00	0%	\$15,995.00
1	S6000 4 PORT ULTRAWAN II MODULE	\$3,000.00	0%	\$3,000.00
1	S6000 MNR MULTI-PROTOCOL ROUTER	\$15,995.00	0%	\$15,995.00
1	S6000 4 PORT ULTRAWAN II MODULE	\$3,000.00	0%	\$3,000.00
1	PRIME/MASTER SITE CONFIG AC POWER	\$34,712.00	0%	\$34,712.00
50	CABLE: 1/4" SUPERFLEX POLY JKT PER FOOT	\$1.95	0%	\$97.50
4	1/4" TYPE N MALE CONNECTOR FOR FSJ1-50A CABLE	\$27.25	0%	\$109.00
1	SRC7500 SWG ROUTING CENTER	\$1,000.00	0%	\$1,000.00
1	ADD: DUAL CORE LAN 1-24 SITES	\$13,900.00	0%	\$13,900.00
1	ADD: DUAL GATEWAY ROUTERS STANDARD	\$31,400.00	0%	\$31,400.00
1	ADD: RED CORE ROUTER 1-24 SITES CWR		0%	\$0.00
1	ADD: DUAL LINK 1 PAIR CWR		0%	\$0.00
1	ISSI GATEWAY WITH 3 PORTS	\$239,640.50	0%	\$239,640.50
2	KVL 4000 KEYLOADER		0%	\$0.00
2	INT: KMF OPERATION		0%	\$0.00
2	ADD: ASTRO 25 MODE		0%	\$0.00
2	ADD: ASN MODE		0%	\$0.00
2	ADD: AC LINE CORD US		0%	\$0.00
2	ADD: ADP PRIVACY		0%	\$0.00
4	ADD: KEYLOAD CABLE FOR APX PORTABLE		0%	\$0.00
2	ADD: USB COMM/CHARGE CABLE W/CUP		0%	\$0.00
2	CABLE KEYLOAD MX		0%	\$0.00
4	ADD: CABLE FOR RNC, DIU, MGEA		0%	\$0.00
4	KEYLOADING CABLE ADAPTER (GCAI)		0%	\$0.00
1	SEVEN AND A HALF FOOT RACK	\$495.00	0%	\$495.00
5	POWER DIST. UNIT SURGE PROTECT 120V	\$990.00	0%	\$4,950.00
5	RACK MT ADAPTER PLATES, 19 IN FOR DSOP820B, DSOP820B2 & DSNOP820B	\$101.00	0%	\$505.00
26	EIGHT WIRE PROTECTION MODULE WITH RJ-48 PASS THROUGH & MECH GRD CONN	\$154.00	0%	\$4,004.00
5	HORIZONTAL RACK BUS BAR FOR TSJ AND WPH SERIES NETWORK PROTECTOR	\$88.00	0%	\$440.00
1	SITE MANAGER ADVANCED	\$3,000.00	0%	\$3,000.00
1	ADD: 90VAC TO 260VAC PS TO SM	\$120.00	0%	\$120.00
1	SDM3000 ASTRO F/W FOR A7.9	\$1,850.00	0%	\$1,850.00
3	AAD TERM BLCK & CONN WI	\$90.00	0%	\$270.00
1	RTU_PER_DEVICE_SW_LICENSES	\$75.00	0%	\$75.00
1	RTU_SW_LIC_PER_NFM-RTU_I-O	\$90.00	0%	\$90.00
1	RTU_SW_LIC_PER_TRAK_GPS	\$90.00	0%	\$90.00
1	SITE MANAGER ADVANCED	\$3,000.00	0%	\$3,000.00
1	90VAC TO 260VAC PS TO SM	\$120.00	0%	\$120.00
1	SDM3000 ASTRO F/W FOR A7.9	\$1,850.00	0%	\$1,850.00
1	RTU_PER_DEVICE_SW_LICENSES	\$75.00	0%	\$75.00
32	RTU_SW_LIC_PER_HARRIS_M-W_RADIO	\$270.00	0%	\$8,640.00
1	GMC_PER_DEVICE_SW_LICENSES	\$75.00	0%	\$75.00
32	GMC_SW_LIC_PER_HARRIS_M-W_RADIO	\$270.00	0%	\$8,640.00
1	MASTER SYSTEM KEY PACKAGE FOR THE ADVANCED SYSTEM KEY CPS FEATURE		0%	\$0.00
1	TORQUE WRENCH KIT FOR 7-16 DIN & TYPE N COUPLING NUTS	\$199.00	0%	\$199.00
FAULT MANAGEMENT				
1	MOSCAD NFM VIRTUAL APPLIANCE	\$28,453.00	0%	\$28,453.00
1	SITE MANAGER ADVANCED	\$3,000.00	0%	\$3,000.00
1	ADD: 90VAC TO 260VAC PS TO SM	\$120.00	0%	\$120.00
1	SDM3000 NETWORK TRANSLATOR ASTRO F/W FOR A7.9	\$1,850.00	0%	\$1,850.00
1	Z400 HIGH TIER WORKSTATION	\$5,950.00	0%	\$5,950.00
1	19" LCD, BLACK, NON-TOUCH	\$1,520.00	0%	\$1,520.00
1	INTOUCH RUNTIME 60K TAG W/O-I/O, V10.1, LIC ONLY		0%	\$0.00
1	SYMANTEC ENDPOINT PROTECTION V11.0 CORP ED LIC & MEDIA SINGLE COPY	\$8,700.00	0%	\$8,700.00
1	NFM FOR A7.9 DOCUMENTATION	\$20.00	0%	\$20.00
1	SDM3000 BUILDER SOFTWARE FOR A7.9	\$800.00	0%	\$800.00
1	GMC_PER_DEVICE_SW_LICENSES	\$75.00	0%	\$75.00
1	GMC_SW_LIC_PER_NFM-RTU_I-O	\$90.00	0%	\$90.00
1	GMC_SW_LIC_PER_TRAK_GPS	\$90.00	0%	\$90.00
58	GMC_PER_DEVICE_SW_LICENSES	\$75.00	0%	\$4,350.00
58	GMC_SW_LIC_PER_NFM-RTU_I-O	\$90.00	0%	\$5,220.00
58	SW.GMC_SW_LIC_PER_RFDS		0%	\$0.00
1	48 VDC RECTIFIER/DC DISTRIBUTION SYSTEM	\$36,680.00	0%	\$36,680.00
1	48 VDC VRLA BATTERY PLANT	\$45,000.00	0%	\$45,000.00
1	48 VDC WIRING	\$12,000.00	0%	\$12,000.00
1	SPILL CONTAINMENT	\$5,000.00	0%	\$5,000.00
1	HIGH-SEISMIC RACK	\$2,000.00	0%	\$2,000.00
1	ADJUSTMENT FOR EQUIPMENT/FIRMWARE/SOFTWARE COSTS NOT INCLUDED ABOVE			1.4808
			Total	\$1,250,000.00

King County P25 Phase 2 Radio System Cost Estimate

URBAN AREA 800 MHZ SIMULCAST PRIME SITE

QUANTITY	PRIME SITE	UNIT PRICE	DISCOUNT	KC PRICE
1	GCP 8000 SITE CONTROLLER CHASSIS	\$3,000.00	0%	\$3,000.00
1	GCP 8000 ISTE CONTROLLER	\$5,000.00	0%	\$5,000.00
1	IP BASED MULTISITE SITE CONTROLLER SOFTWARE	\$62,500.00	0%	\$62,500.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GCP 8000 SITE CONTROLLER CHASSIS	\$3,000.00	0%	\$3,000.00
1	GCP 8000 ISTE CONTROLLER	\$5,000.00	0%	\$5,000.00
1	IP BASED MULTISITE SITE CONTROLLER SOFTWARE	\$62,500.00	0%	\$62,500.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
3	7.5' RACK	\$495.00	0%	\$1,485.00
4	POWER DIST. UNIT SURGE PROTECT 120V	\$990.00	0%	\$3,960.00
4	RACK MOUNT ADAPTER PALTES 19 IN FOR DSOP820B.DSOP820B2, DSNSOP820B	\$101.00	0%	\$404.00
22	8 WIRE PROTECTION MUDULE WITH RJ-28 PASS THROUGH & MECH GRD CONN	\$154.00	0%	\$3,388.00
4	HORIZONTAL RACK BUS BAR FOR TSJ AND WPH SERIES NETWORK PROTECTOR	\$88.00	0%	\$352.00
2	GGM 8000 GATEWAY	\$4,200.00	0%	\$8,400.00
2	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	SRC 24 PORT T1/E1 EXP II	\$0.00	0%	\$0.00
2	CO-OP WAN ROUTER RELAY PANEL	\$7,500.00	0%	\$15,000.00
1	SITE MANAGER	\$3,000.00	0%	\$3,000.00
1	90VAC TO 260VAC PS TO SM	\$120.00	0%	\$120.00
1	SDM3000 ASTRO F/W FOR A7.9	\$1,850.00	0%	\$1,850.00
3	TERM BLOCK	\$90.00	0%	\$270.00
4	3500 ETHERNET SWITCH	3,600.00	0%	14,400.00
1	S6000 MNR MULTI-PROTOCOL ROUTER	15,995.00	0%	15,995.00
1	S6000 4 PORT ULTRAWAN II MODULE	3,000.00	0%	3,000.00
1	S6000 MNR MULTI-PROTOCOL ROUTER	15,995.00	0%	15,995.00
1	S6000 4 PORT ULTRAWAN II MODULE	3,000.00	0%	3,000.00
1	GPS FREQUENCY REFERENCE	\$34,712.00	0%	\$34,712.00
1	ANTENNA KIT FOR 8900 W/ 100' CABLE, GROUNDING, LIGHTNING SUPPRESSOR	\$1,186.00	0%	\$1,186.00
1	48 VDC RECTIFIER/DC DISTRIBUTION SYSTEM	\$36,680.00	0%	\$36,680.00
1	48 VDC VRLA BATTERY PLANT	\$45,000.00	0%	\$45,000.00
1	48 VDC WIRING	\$12,000.00	0%	\$12,000.00
1	SPILL CONTAINMENT	\$5,000.00	0%	\$5,000.00
1	HIGH-SEISMIC RACK	\$2,000.00	0%	\$2,000.00
			Total	\$914,197.00

King County P25 Phase 2 Radio System Cost Estimate

800 MHz SIMULCAST PRIME SITE - TRANSPORTATION CORRIDORS

QUANTITY	PRIME SITE	UNIT PRICE	DISCOUNT	KC PRICE
1	GCP 8000 SITE CONTROLLER CHASSIS	\$3,000.00	0%	\$3,000.00
1	GCP 8000 ISTE CONTROLLER	\$5,000.00	0%	\$5,000.00
1	IP BASED MULTISITE SITE CONTROLLER SOFTWARE	\$62,500.00	0%	\$62,500.00
1	RACK MOUNT HARDWARE	\$0.00	0%	\$0.00
1	POWER CABLE, DC	\$0.00	0%	\$0.00
1	GCP 8000 SITE CONTROLLER CHASSIS	\$3,000.00	0%	\$3,000.00
1	GCP 8000 ISTE CONTROLLER	\$5,000.00	0%	\$5,000.00
1	IP BASED MULTISITE SITE CONTROLLER SOFTWARE	\$62,500.00	0%	\$62,500.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
3	7.5" RACK	\$495.00	0%	\$1,485.00
4	POWER DIST. UNIT SURGE PROTECT 120V	\$990.00	0%	\$3,960.00
4	RACK MOUNT ADAPTER PALTES 19 IN FOR DSOP820B,DSOP820B2, DSNSOP820B	\$101.00	0%	\$404.00
22	8 WIRE PROTECTION MUDULE WITH RJ-28 PASS THROUGH & MECH GRD CONN	\$154.00	0%	\$3,388.00
4	HORIZONTAL RACK BUS BAR FOR TSJ AND WPH SERIES NETWORK PROTECTOR	\$88.00	0%	\$352.00
2	GGM 8000 GATEWAY	\$4,200.00	0%	\$8,400.00
2	DC POWER	\$0.00	0%	\$0.00
1	SRC 24 PORT T1/E1 EXP II		0%	\$0.00
2	CO-OP WAN ROUTER RELAY PANEL	\$7,500.00	0%	\$15,000.00
1	SITE MANAGER	\$3,000.00	0%	\$3,000.00
1	90VAC TO 260VAC PS TO SM	\$120.00	0%	\$120.00
1	SDM3000 ASTRO F/W FOR A7.9	\$1,850.00	0%	\$1,850.00
3	TERM BLOCK	\$90.00	0%	\$270.00
4	3500 ETHERNET SWITCH	3,600.00	0%	14,400.00
1	S6000 MNR MULTI-PROTOCOL ROUTER	15,995.00	0%	15,995.00
1	S6000 4 PORT ULTRAWAN II MODULE	3,000.00	0%	3,000.00
1	S6000 MNR MULTI-PROTOCOL ROUTER	15,995.00	0%	15,995.00
1	S6000 4 PORT ULTRAWAN II MODULE	3,000.00	0%	3,000.00
1	GPS FREQUENCY REFERENCE	\$34,712.00	0%	\$34,712.00
1	ANTENNA KIT FOR 8900 W/ 100' CABLE, GROUNDING, LIGHTNING SUPPRESSOR	\$1,186.00	0%	\$1,186.00
1	48 VDC RECTIFIER/DC DISTRIBUTION SYSTEM	\$36,680.00	0%	\$36,680.00
1	48 VDC VRLA BATTERY PLANT	\$45,000.00	0%	\$45,000.00
1	48 VDC WIRING	\$12,000.00	0%	\$12,000.00
1	SPILL CONTAINMENT	\$5,000.00	0%	\$5,000.00
1	HIGH-SEISMIC RACK	\$2,000.00	0%	\$2,000.00
			Total	\$524,197.00

King County P25 Phase 2 Radio System Cost Estimate

VHF/UHF SIMULCAST PRIME SITE

QUANTITY	PRIME SITE	UNIT PRICE	DISCOUNT	KC PRICE
1	GCP 8000 SITE CONTROLLER CHASSIS	\$3,000.00	0%	\$3,000.00
1	GCP 8000 ISTE CONTROLLER	\$5,000.00	0%	\$5,000.00
1	IP BASED MULTISITE SITE CONTROLLER SOFTWARE	\$62,500.00	0%	\$62,500.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GCP 8000 SITE CONTROLLER CHASSIS	\$3,000.00	0%	\$3,000.00
1	GCP 8000 ISTE CONTROLLER	\$5,000.00	0%	\$5,000.00
1	IP BASED MULTISITE SITE CONTROLLER SOFTWARE	\$62,500.00	0%	\$62,500.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	GMC 8000 COMPARATOR CHASSIS	\$3,000.00	0%	\$3,000.00
2	GMC 8000 COMPARATOR	\$5,000.00	0%	\$10,000.00
2	IP BASED MULTISITE OPERATION	\$9,000.00	0%	\$18,000.00
2	P25 PHASE 2 TDMA OPERATION (INCLUDES PHASE 1)	\$4,000.00	0%	\$8,000.00
1	RACK MOUNT HARDWARE (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
1	POWER CABLE, DC (INCLUDED IN UNIT COST)	\$0.00	0%	\$0.00
3	7.5" RACK	\$495.00	0%	\$1,485.00
4	POWER DIST. UNIT SURGE PROTECT 120V	\$990.00	0%	\$3,960.00
4	RACK MOUNT ADAPTER PALTES 19 IN FOR DSOP820B,DSOP820B2, DSNSOP820B	\$101.00	0%	\$404.00
22	8 WIRE PROTECTION MUDULE WITH RJ-28 PASS THROUGH & MECH GRD CONN	\$154.00	0%	\$3,388.00
4	HORIZONTAL RACK BUS BAR FOR TSJ AND WPH SERIES NETWORK PROTECTOR	\$88.00	0%	\$352.00
2	GGM 8000 GATEWAY	\$4,200.00	0%	\$8,400.00
2	DC POWER	\$0.00	0%	\$0.00
1	SRC 24 PORT T1/E1 EXP II		0%	\$0.00
2	CO-OP WAN ROUTER RELAY PANEL	\$7,500.00	0%	\$15,000.00
1	SITE MANAGER	\$3,000.00	0%	\$3,000.00
1	90VAC TO 260VAC PS TO SM	\$120.00	0%	\$120.00
1	SDM3000 ASTRO F/W FOR A7.9	\$1,850.00	0%	\$1,850.00
3	TERM BLOCK	\$90.00	0%	\$270.00
4	3500 ETHERNET SWITCH	3,600.00	0%	14,400.00
1	S6000 MNR MULTI-PROTOCOL ROUTER	15,995.00	0%	15,995.00
1	S6000 4 PORT ULTRAWAN II MODULE	3,000.00	0%	3,000.00
1	S6000 MNR MULTI-PROTOCOL ROUTER	15,995.00	0%	15,995.00
1	S6000 4 PORT ULTRAWAN II MODULE	3,000.00	0%	3,000.00
1	GPS FREQUENCY REFERENCE	\$34,712.00	0%	\$34,712.00
1	ANTENNA KIT FOR 8900 W/ 100' CABLE, GROUNDING, LIGHTNING SUPPRESSOR	\$1,186.00	0%	\$1,186.00
1	48 VDC RECTIFIER/DC DISTRIBUTION SYSTEM	\$36,680.00	0%	\$36,680.00
1	48 VDC VRLA BATTERY PLANT	\$45,000.00	0%	\$45,000.00
1	48 VDC WIRING	\$12,000.00	0%	\$12,000.00
1	SPILL CONTAINMENT	\$5,000.00	0%	\$5,000.00
1	HIGH-SEISMIC RACK	\$2,000.00	0%	\$2,000.00
			Total	\$446,197.00

King County P25 Phase 2 Radio System Cost Estimate

URBAN AREA TRUNKED SIMULCAST SITE WITH 800 MHZ, VHF & UHF

QUANTITY	TRUNKING SIMULCAST	UNIT PRICE	DISCOUNT	KC PRICE
2	GPS TIMING ANTENNA/RECEIVER	\$1,090.00	0%	\$2,180.00
2	MOUNTING KIT FOR GPS ANTENNA	\$90.00	0%	\$180.00
2	HPO GPS SURGE PROTECTOR 48 VDC	\$625.00	0%	\$1,250.00
2	125' OUTDOOR UV PROTECTED CABLE 6PR, 22 AWG DB15	\$530.00	0%	\$1,060.00
1	GTR 8000 EXPANDABLE SITE SUBSYSTEM	\$6,000.00	0%	\$6,000.00
6	700/800 MHZ MID POWER	\$6,300.00	0%	\$37,800.00
6	ASTRO 25 P25 PHASE 2 TDMA SOFTWARE	\$4,000.00	0%	\$24,000.00
6	GTR 8000 BASE RADIOS	\$11,900.00	0%	\$71,400.00
6	IP BASED MULTISITE BASE RADIO SOFTWARE	\$16,700.00	0%	\$100,200.00
1	SITE & CABINET RMC W/CAPABILITY OF 7-24 BRS	\$2,100.00	0%	\$2,100.00
1	PRIMARY 6 PORT CAVITY COMBINER	\$8,400.00	0%	\$8,400.00
2	GPB 800 REFERENCE DIST MODULE	\$23,000.00	0%	\$46,000.00
2	REFERENCE DISTRIBUTION SOFTWARE (INCLUDED W/ GPB 8000)	\$0.00	0%	\$0.00
2	GGM 8000 GATEWAY	\$4,200.00	0%	\$8,400.00
1	7.5' OPEN RACK, 48 RU	\$495.00	0%	\$495.00
1	GTR 8000 EXPANDABLE SITE SUBSYSTEM	\$6,000.00	0%	\$6,000.00
6	700/800 MHZ MID POWER	\$6,300.00	0%	\$37,800.00
6	ASTRO 25 P25 PHASE 2 TDMA SOFTWARE	\$4,000.00	0%	\$24,000.00
6	GTR 8000 BASE RADIOS	\$11,900.00	0%	\$71,400.00
6	IP BASED MULTISITE BASE RADIO SOFTWARE	\$16,700.00	0%	\$100,200.00
1	CABINET RMC W/CAPABILITY OF 6 BRS	\$700.00	0%	\$700.00
1	PRIMARY 6 PORT CAVITY COMBINER	\$8,400.00	0%	\$8,400.00
2	XHUB	\$3,500.00	0%	\$3,500.00
1	7.5' OPEN RACK, 48 RU	\$495.00	0%	\$495.00
1	GTR 8000 EXPANDABLE SITE SUBSYSTEM	\$6,000.00	0%	\$6,000.00
6	700/800 MHZ MID POWER	\$6,300.00	0%	\$37,800.00
6	ASTRO 25 P25 PHASE 2 TDMA SOFTWARE	\$4,000.00	0%	\$24,000.00
6	GTR 8000 BASE RADIOS	\$11,900.00	0%	\$71,400.00
6	IP BASED MULTISITE BASE RADIO SOFTWARE	\$16,700.00	0%	\$100,200.00
1	SITE & CABINET RMC W/CAPABILITY OF 7-24 BRS	\$2,100.00	0%	\$2,100.00
1	PRIMARY 6 PORT CAVITY COMBINER	\$8,400.00	0%	\$8,400.00
2	XHUB	\$3,500.00	0%	\$3,500.00
1	7.5' OPEN RACK, 48 RU	\$495.00	0%	\$495.00
1	GTR 8000 EXPANDABLE SITE SUBSYSTEM	\$6,000.00	0%	\$6,000.00
6	700/800 MHZ MID POWER	\$6,300.00	0%	\$37,800.00
6	ASTRO 25 P25 PHASE 2 TDMA SOFTWARE	\$4,000.00	0%	\$24,000.00
6	GTR 8000 BASE RADIOS	\$11,900.00	0%	\$71,400.00
6	IP BASED MULTISITE BASE RADIO SOFTWARE	\$16,700.00	0%	\$100,200.00
1	CABINET RMC W/CAPABILITY OF 6 BRS	\$700.00	0%	\$700.00
1	PRIMARY 6 PORT CAVITY COMBINER	\$8,400.00	0%	\$8,400.00
2	XHUB	\$3,500.00	0%	\$3,500.00
1	7.5' OPEN RACK, 48 RU	\$495.00	0%	\$495.00
1	GTR 8000 EXPANDABLE SITE SUBSYSTEM	\$6,000.00	0%	\$6,000.00
4	700/800 MHZ MID POWER	\$6,300.00	0%	\$25,200.00
4	ASTRO 25 P25 PHASE 2 TDMA SOFTWARE	\$4,000.00	0%	\$16,000.00
4	GTR 8000 BASE RADIOS	\$11,900.00	0%	\$47,600.00
4	IP BASED MULTISITE BASE RADIO SOFTWARE	\$16,700.00	0%	\$66,800.00
1	CABINET RMC W/CAPABILITY OF 6 BRS	\$700.00	0%	\$700.00
1	PRIMARY 6 PORT CAVITY COMBINER	\$8,400.00	0%	\$8,400.00
2	XHUB	\$3,500.00	0%	\$3,500.00
1	7.5' OPEN RACK, 48 RU	\$495.00	0%	\$495.00
1	GTR 8000 EXPANDABLE SITE SUBSYSTEM	\$6,000.00	0%	\$6,000.00
2	VHF MID POWER	\$6,300.00	0%	\$12,600.00
2	ASTRO 25 P25 PHASE 2 TDMA SOFTWARE	\$4,000.00	0%	\$8,000.00
2	GTR 8000 BASE RADIOS	\$11,900.00	0%	\$23,800.00
2	IP BASED MULTISITE BASE RADIO SOFTWARE	\$16,700.00	0%	\$33,400.00
1	CABINET RMC W/CAPABILITY OF 6 BRS	\$700.00	0%	\$700.00
1	PRIMARY 6 PORT CAVITY COMBINER	\$8,400.00	0%	\$8,400.00
2	XHUB	\$3,500.00	0%	\$3,500.00
1	7.5' OPEN RACK, 48 RU	\$495.00	0%	\$495.00
1	GTR 8000 EXPANDABLE SITE SUBSYSTEM	\$6,000.00	0%	\$6,000.00
2	VHF MID POWER	\$6,300.00	0%	\$12,600.00
2	ASTRO 25 P25 PHASE 2 TDMA SOFTWARE	\$4,000.00	0%	\$8,000.00
2	GTR 8000 BASE RADIOS	\$11,900.00	0%	\$23,800.00
2	IP BASED MULTISITE BASE RADIO SOFTWARE	\$16,700.00	0%	\$33,400.00
1	CABINET RMC W/CAPABILITY OF 6 BRS	\$700.00	0%	\$700.00
1	PRIMARY 6 PORT CAVITY COMBINER	\$8,400.00	0%	\$8,400.00
2	XHUB	\$3,500.00	0%	\$3,500.00
1	7.5' OPEN RACK, 48 RU	\$495.00	0%	\$495.00
1	GTR 8000 EXPANDABLE SITE SUBSYSTEM	\$6,000.00	0%	\$6,000.00
2	VHF MID POWER	\$6,300.00	0%	\$12,600.00
2	ASTRO 25 P25 PHASE 2 TDMA SOFTWARE	\$4,000.00	0%	\$8,000.00
2	GTR 8000 BASE RADIOS	\$11,900.00	0%	\$23,800.00
2	IP BASED MULTISITE BASE RADIO SOFTWARE	\$16,700.00	0%	\$33,400.00
1	CABINET RMC W/CAPABILITY OF 6 BRS	\$700.00	0%	\$700.00
1	PRIMARY 6 PORT CAVITY COMBINER	\$8,400.00	0%	\$8,400.00
2	XHUB	\$3,500.00	0%	\$3,500.00
1	7.5' OPEN RACK, 48 RU	\$495.00	0%	\$495.00
3	800 MHZ TX FILTER W/PMU	\$1,000.00	0%	\$3,000.00
3	PHASING HARNESS	\$1,000.00	0%	\$3,000.00
2	800 MHZ SITE PRESELECTOR	\$3,500.00	0%	\$7,000.00
1	UHF TX FILTER W/PMU	\$3,500.00	0%	\$3,500.00
1	UHF SITE PRESELECTOR	\$3,500.00	0%	\$3,500.00
1	VHF TX FILTER W/PMU	\$3,500.00	0%	\$3,500.00
1	VHF SITE PRESELECTOR	\$3,500.00	0%	\$3,500.00
9	SURGE ARRESTOR	\$80.23	0%	\$722.07
1	SITE MANAGER	\$3,000.00	0%	\$3,000.00
1	90VAC TO 280VAC PS TO SM	\$120.00	0%	\$120.00
1	SDM3000 ASTRO FW FOR A7.9	\$1,850.00	0%	\$1,850.00
3	TERM BLOCK	\$90.00	0%	\$270.00
1	800 MHZ COLLINEAR OMNI ANTENNA, 11.5 DBD	\$2,000.00	0%	\$2,000.00
15	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$44.25
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
2	CABLE WRAP WEATHERPROOFING	\$36.45	0%	\$72.90
200	CABLE: 1-5/8" AVA HELIAX POLY JKT PER FOOT	\$20.98	0%	\$4,196.00
2	1-5/8" 7 - 16 DIN FEMALE POSITIVE STOP CONNECTOR	\$176.51	0%	\$353.02
5	1-5/8" SUREGROUND GROUNDING	\$38.51	0%	\$192.55
2	1-5/8" SUPPORT HOIST GRIP	\$35.36	0%	\$70.72
7	1-5/8" CABLE HANGER KIT 10 PACK	\$28.08	0%	\$196.56
25	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$73.75
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
1	800 MHZ COLLINEAR OMNI ANTENNA, 11.5 DBD	\$2,000.00	0%	\$2,000.00
15	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$44.25
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
2	CABLE WRAP WEATHERPROOFING	\$36.45	0%	\$72.90
200	CABLE: 1-5/8" AVA HELIAX POLY JKT PER FOOT	\$20.98	0%	\$4,196.00
2	1-5/8" 7 - 16 DIN FEMALE POSITIVE STOP CONNECTOR	\$176.51	0%	\$353.02
5	1-5/8" SUREGROUND GROUNDING	\$38.51	0%	\$192.55
2	1-5/8" SUPPORT HOIST GRIP	\$35.36	0%	\$70.72
7	1-5/8" CABLE HANGER KIT 10 PACK	\$28.08	0%	\$196.56
25	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$73.75
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
1	800 MHZ COLLINEAR OMNI ANTENNA, 11.5 DBD	\$2,000.00	0%	\$2,000.00
15	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$44.25
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
2	CABLE WRAP WEATHERPROOFING	\$36.45	0%	\$72.90
200	CABLE: 1-5/8" AVA HELIAX POLY JKT PER FOOT	\$20.98	0%	\$4,196.00
2	1-5/8" 7 - 16 DIN FEMALE POSITIVE STOP CONNECTOR	\$176.51	0%	\$353.02
5	1-5/8" SUREGROUND GROUNDING	\$38.51	0%	\$192.55
2	1-5/8" SUPPORT HOIST GRIP	\$35.36	0%	\$70.72
7	1-5/8" CABLE HANGER KIT 10 PACK	\$28.08	0%	\$196.56
25	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$73.75
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
1	800 MHZ COLLINEAR OMNI ANTENNA, 11.5 DBD	\$2,000.00	0%	\$2,000.00
15	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$44.25
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
2	CABLE WRAP WEATHERPROOFING	\$36.45	0%	\$72.90
200	CABLE: 1-5/8" AVA HELIAX POLY JKT PER FOOT	\$20.98	0%	\$4,196.00
2	1-5/8" 7 - 16 DIN FEMALE POSITIVE STOP CONNECTOR	\$176.51	0%	\$353.02
5	1-5/8" SUREGROUND GROUNDING	\$38.51	0%	\$192.55
2	1-5/8" SUPPORT HOIST GRIP	\$35.36	0%	\$70.72
7	1-5/8" CABLE HANGER KIT 10 PACK	\$28.08	0%	\$196.56
25	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$73.75
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
1	VHF OMNI ANTENNA, 6 DBD, V-POL	\$1,450.00	0%	\$1,450.00
15	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$44.25
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
2	CABLE WRAP WEATHERPROOFING	\$32.21	0%	\$64.42
200	CABLE: 7/8" AVA HELIAX POLY JKT PER FOOT	\$8.37	0%	\$1,674.00
2	7/8" 7 - 16 DIN FEMALE POSITIVE STOP CONNECTOR	\$39.31	0%	\$78.62
5	7/8" SUREGROUND GROUNDING	\$34.84	0%	\$174.20
2	7/8" SUPPORT HOIST GRIP	\$55.50	0%	\$111.00
7	7/8" CABLE HANGER KIT 10 PACK	\$28.08	0%	\$196.56
25	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$73.75
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
1	VHF OMNI ANTENNA, 6 DBD, V-POL	\$1,450.00	0%	\$1,450.00
15	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$44.25
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
2	CABLE WRAP WEATHERPROOFING	\$32.21	0%	\$64.42
200	CABLE: 7/8" AVA HELIAX POLY JKT PER FOOT	\$8.37	0%	\$1,674.00
2	7/8" 7 - 16 DIN FEMALE POSITIVE STOP CONNECTOR	\$39.31	0%	\$78.62
5	7/8" SUREGROUND GROUNDING	\$34.84	0%	\$174.20
2	7/8" SUPPORT HOIST GRIP	\$55.50	0%	\$111.00
7	7/8" CABLE HANGER KIT 10 PACK	\$28.08	0%	\$196.56
25	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$73.75
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
1	VHF OMNI ANTENNA, 6 DBD, V-POL	\$1,450.00	0%	\$1,450.00
15	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$44.25
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
2	CABLE WRAP WEATHERPROOFING	\$32.21	0%	\$64.42
200	CABLE: 7/8" AVA HELIAX POLY JKT PER FOOT	\$8.37	0%	\$1,674.00
2	7/8" 7 - 16 DIN FEMALE POSITIVE STOP CONNECTOR	\$39.31	0%	\$78.62
5	7/8" SUREGROUND GROUNDING	\$34.84	0%	\$174.20
2	7/8" SUPPORT HOIST GRIP	\$55.50	0%	\$111.00
7	7/8" CABLE HANGER KIT 10 PACK	\$28.08	0%	\$196.56
25	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$73.75
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
1	48 VDC RECTIFIER/DC DISTRIBUTION SYSTEM	\$36,680.00	0%	\$36,680.00
1	48 VDC VRLA BATTERY PLANT	\$45,000.00	0%	\$45,000.00
1	48 VDC WIRING	\$12,000.00	0%	\$12,000.00
1	SPILL CONTAINMENT	\$5,000.00	0%	\$5,000.00
1	HIGH-SEISMIC RACK	\$2,000.00	0%	\$2,000.00
	Total			\$1,622,287.00

King County P25 Phase 2 Radio System Cost Estimate

800 MHZ SIMULCAST TRUNKED SITE - TRANSPORTATION CORRIDORS

QUANTITY	TRUNKING SIMULCAST	UNIT PRICE	DISCOUNT	KC PRICE
2	GPS TIMING ANTENA/RECEIVER	\$1,090.00	0%	\$2,180.00
2	MOUNTING KIT FOR GPS ANTENNA	\$90.00	0%	\$180.00
2	HPD GPS SURGE PROTECTOR 48 VDC	\$625.00	0%	\$1,250.00
2	125' OUTDOOR UV PROTECTED CABLE 6PR, 22 AWG DB15	\$530.00	0%	\$1,060.00
1	GTR 8000 EXPANDABLE SITE SUBSYSTEM	\$6,000.00	0%	\$6,000.00
6	700/800 MHZ MID POWER	\$6,300.00	0%	\$37,800.00
6	ASTRO 25 P25 PHASE 2 TDMA SOFTWARE	\$4,000.00	0%	\$24,000.00
6	GTR 8000 BASE RADIOS	\$11,900.00	0%	\$71,400.00
6	IP BASED MULTISITE BASE RADIO SOFTWARE	\$16,700.00	0%	\$100,200.00
1	SITE & CABINET RMC W/CAPABILITY OF 7-24 BRS	\$2,100.00	0%	\$2,100.00
1	PRIMARY 6 PORT CAVITY COMBINER	\$8,400.00	0%	\$8,400.00
2	GPB 800 REFERENCE DIST MODULE	\$23,000.00	0%	\$46,000.00
2	REFERENCE DISTRIBUTION SOFTWARE (INCLUDED W/ GPB 8000)	\$0.00	0%	\$0.00
2	GGM 8000 GATEWAY	\$4,200.00	0%	\$8,400.00
1	7.5' OPEN RACK, 48 RU	\$495.00	0%	\$495.00
1	GTR 8000 EXPANDABLE SITE SUBSYSTEM	\$6,000.00	0%	\$6,000.00
2	700/800 MHZ MID POWER	\$6,300.00	0%	\$12,600.00
2	ASTRO 25 P25 PHASE 2 TDMA SOFTWARE	\$4,000.00	0%	\$8,000.00
2	GTR 8000 BASE RADIOS	\$11,900.00	0%	\$23,800.00
2	IP BASED MULTISITE BASE RADIO SOFTWARE	\$16,700.00	0%	\$33,400.00
1	CABINET RMC W/CAPABILITY OF 6 BRS	\$700.00	0%	\$700.00
1	PRIMARY 6 PORT CAVITY COMBINER	\$8,400.00	0%	\$8,400.00
2	XHUB	\$3,500.00	0%	\$3,500.00
1	7.5' OPEN RACK, 48 RU	\$495.00	0%	\$495.00
1	800 MHZ TX FILTER W/PMU	\$1,000.00	0%	\$1,000.00
1	PHASING HARNESS	\$1,000.00	0%	\$1,000.00
1	800 MHZ SITE PRESELECTOR	\$3,500.00	0%	\$3,500.00
2	SURGE ARRESTOR	\$80.23	0%	\$160.46
1	SITE MANAGER	\$3,000.00	0%	\$3,000.00
1	90VAC TO 260VAC PS TO SM	\$120.00	0%	\$120.00
1	SDM3000 ASTRO F/W FOR A7.9	\$1,850.00	0%	\$1,850.00
3	TERM BLOCK	\$90.00	0%	\$270.00
1	800 MHZ COLLINEAR OMNI ANTENNA, 11.5 DBD	\$2,000.00	0%	\$2,000.00
15	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$44.25
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
2	CABLE WRAP WEATHERPROOFING	\$36.45	0%	\$72.90
200	CABLE: 1-5/8" AVA HELIAX POLY JKT PER FOOT	\$20.98	0%	\$4,196.00
2	1-5/8" 7 - 16 DIN FEMALE POSTIVE STOP CONNECTOR	\$176.51	0%	\$353.02
5	1-5/8" SUREGROUND GROUNDING	\$38.51	0%	\$192.55
2	1-5/8" SUPPORT HOIST GRIP	\$35.36	0%	\$70.72
7	1-5/8" CABLE HANGER KIT 10 PACK	\$28.08	0%	\$196.56
25	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$73.75
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
1	800 MHZ COLLINEAR OMNI ANTENNA, 11.5 DBD	\$2,000.00	0%	\$2,000.00
15	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$44.25
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
2	CABLE WRAP WEATHERPROOFING	\$36.45	0%	\$72.90
200	CABLE: 1-5/8" AVA HELIAX POLY JKT PER FOOT	\$20.98	0%	\$4,196.00
2	1-5/8" 7 - 16 DIN FEMALE POSTIVE STOP CONNECTOR	\$176.51	0%	\$353.02
5	1-5/8" SUREGROUND GROUNDING	\$38.51	0%	\$192.55
2	1-5/8" SUPPORT HOIST GRIP	\$35.36	0%	\$70.72
7	1-5/8" CABLE HANGER KIT 10 PACK	\$28.08	0%	\$196.56
25	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$73.75
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
1	48 VDC RECTIFIER/DC DISTRIBUTION SYSTEM	\$36,680.00	0%	\$36,680.00
1	48 VDC VRLA BATTERY PLANT	\$45,000.00	0%	\$45,000.00
1	48 VDC WIRING	\$12,000.00	0%	\$12,000.00
1	SPILL CONTAINMENT	\$5,000.00	0%	\$5,000.00
1	HIGH-SEISMIC RACK	\$2,000.00	0%	\$2,000.00
			Total	\$532,547.96

King County P25 Phase 2 Radio System Cost Estimate

800 MHz/VHF/UHF TRUNKED SIMULCAST SITE - TRANSPORTATION CORRIDORS

QUANTITY	TRUNKING SIMULCAST	UNIT PRICE	DISCOUNT	KC PRICE
2	GPS TIMING ANTENNA/RECEIVER	\$1,090.00	0%	\$2,180.00
2	MOUNTING KIT FOR GPS ANTENNA	\$90.00	0%	\$180.00
2	HPD GPS SURGE PROTECTOR 48 VDC	\$625.00	0%	\$1,250.00
2	125' OUTDOOR UV PROTECTED CABLE 6PR, 22 AWG DB15	\$530.00	0%	\$1,060.00
1	GTR 8000 EXPANDABLE SITE SUBSYSTEM	\$6,000.00	0%	\$6,000.00
6	700/800 MHZ MID POWER	\$6,300.00	0%	\$37,800.00
6	ASTRO 25 P25 PHASE 2 TDMA SOFTWARE	\$4,000.00	0%	\$24,000.00
6	GTR 8000 BASE RADIOS	\$11,900.00	0%	\$71,400.00
6	IP BASED MULTISITE BASE RADIO SOFTWARE	\$16,700.00	0%	\$100,200.00
1	SITE & CABINET RMC W/CAPABILITY OF 7-24 BRS	\$2,100.00	0%	\$2,100.00
1	PRIMARY 6 PORT CAVITY COMBINER	\$8,400.00	0%	\$8,400.00
2	GPB 800 REFERENCE DIST MODULE	\$23,000.00	0%	\$46,000.00
2	REFERENCE DISTRIBUTION SOFTWARE (INCLUDED W/ GPB 8000)	\$0.00	0%	\$0.00
2	GGM 8000 GATEWAY	\$4,200.00	0%	\$8,400.00
1	7.5' OPEN RACK, 48 RU	\$495.00	0%	\$495.00
1	GTR 8000 EXPANDABLE SITE SUBSYSTEM	\$6,000.00	0%	\$6,000.00
2	700/800 MHZ MID POWER	\$6,300.00	0%	\$12,600.00
2	ASTRO 25 P25 PHASE 2 TDMA SOFTWARE	\$4,000.00	0%	\$8,000.00
2	GTR 8000 BASE RADIOS	\$11,900.00	0%	\$23,800.00
2	IP BASED MULTISITE BASE RADIO SOFTWARE	\$16,700.00	0%	\$33,400.00
1	CABINET RMC W/CAPABILITY OF 6 BRS	\$700.00	0%	\$700.00
1	PRIMARY 6 PORT CAVITY COMBINER	\$8,400.00	0%	\$8,400.00
2	XHUB	\$3,500.00	0%	\$3,500.00
1	7.5' OPEN RACK, 48 RU	\$495.00	0%	\$495.00
1	GTR 8000 EXPANDABLE SITE SUBSYSTEM	\$6,000.00	0%	\$6,000.00
2	VHF MID POWER	\$6,300.00	0%	\$12,600.00
2	ASTRO 25 P25 PHASE 2 TDMA SOFTWARE	\$4,000.00	0%	\$8,000.00
2	GTR 8000 BASE RADIOS	\$11,900.00	0%	\$23,800.00
2	IP BASED MULTISITE BASE RADIO SOFTWARE	\$16,700.00	0%	\$33,400.00
1	CABINET RMC W/CAPABILITY OF 6 BRS	\$700.00	0%	\$700.00
1	PRIMARY 6 PORT CAVITY COMBINER	\$8,400.00	0%	\$8,400.00
2	XHUB	\$3,500.00	0%	\$3,500.00
1	7.5' OPEN RACK, 48 RU	\$495.00	0%	\$495.00
1	GTR 8000 EXPANDABLE SITE SUBSYSTEM	\$6,000.00	0%	\$6,000.00
2	UHF MID POWER	\$6,300.00	0%	\$12,600.00
2	ASTRO 25 P25 PHASE 2 TDMA SOFTWARE	\$4,000.00	0%	\$8,000.00
2	GTR 8000 BASE RADIOS	\$11,900.00	0%	\$23,800.00
2	IP BASED MULTISITE BASE RADIO SOFTWARE	\$16,700.00	0%	\$33,400.00
1	CABINET RMC W/CAPABILITY OF 6 BRS	\$700.00	0%	\$700.00
1	PRIMARY 6 PORT CAVITY COMBINER	\$8,400.00	0%	\$8,400.00
2	XHUB	\$3,500.00	0%	\$3,500.00
1	7.5' OPEN RACK, 48 RU	\$495.00	0%	\$495.00
1	800 MHZ TX FILTER W/PMU	\$1,000.00	0%	\$1,000.00
1	PHASING HARNESS	\$1,000.00	0%	\$1,000.00
1	800 MHZ SITE PRESELECTOR	\$3,500.00	0%	\$3,500.00
1	UHF TX FILTER W/PMU	\$3,500.00	0%	\$3,500.00
1	UHF SITE PRESELECTOR	\$3,500.00	0%	\$3,500.00
1	VHF TX FILTER W/PMU	\$3,500.00	0%	\$3,500.00
1	VHF SITE PRESELECTOR	\$3,500.00	0%	\$3,500.00
6	SURGE ARRESTOR	\$80.23	0%	\$481.38
1	SITE MANAGER	\$3,000.00	0%	\$3,000.00
1	90VAC TO 260VAC PS TO SM	\$120.00	0%	\$120.00
1	SDM3000 ASTRO FW FOR A7.9	\$1,850.00	0%	\$1,850.00
3	TERM BLOCK	\$90.00	0%	\$270.00
1	800 MHZ COLLINEAR OMNI ANTENNA, 11.5 DBD	\$2,000.00	0%	\$2,000.00
15	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$44.25
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
2	CABLE WRAP WEATHERPROOFING	\$36.45	0%	\$72.90
200	CABLE: 1-5/8" AVA HELIAX POLY JKT PER FOOT	\$20.98	0%	\$4,196.00
2	1-5/8" 7 - 16 DIN FEMALE POSITIVE STOP CONNECTOR	\$176.51	0%	\$353.02
5	1-5/8" SUREGROUND GROUNDING	\$38.51	0%	\$192.55
2	1-5/8" SUPPORT HOIST GRIP	\$35.36	0%	\$70.72
7	1-5/8" CABLE HANGER KIT 10 PACK	\$28.08	0%	\$196.56
25	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$73.75
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
1	800 MHZ COLLINEAR OMNI ANTENNA, 11.5 DBD	\$2,000.00	0%	\$2,000.00
15	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$44.25
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
2	CABLE WRAP WEATHERPROOFING	\$36.45	0%	\$72.90
200	CABLE: 1-5/8" AVA HELIAX POLY JKT PER FOOT	\$20.98	0%	\$4,196.00
2	1-5/8" 7 - 16 DIN FEMALE POSITIVE STOP CONNECTOR	\$176.51	0%	\$353.02
5	1-5/8" SUREGROUND GROUNDING	\$38.51	0%	\$192.55
2	1-5/8" SUPPORT HOIST GRIP	\$35.36	0%	\$70.72
7	1-5/8" CABLE HANGER KIT 10 PACK	\$28.08	0%	\$196.56
25	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$73.75
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
1	VHF OMNI ANTENNA, 6 DBD, V-POL	\$1,450.00	0%	\$1,450.00
15	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$44.25
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
2	CABLE WRAP WEATHERPROOFING	\$32.21	0%	\$64.42
200	CABLE: 7/8" AVA HELIAX POLY JKT PER FOOT	\$8.37	0%	\$1,674.00
2	7/8" 7 - 16 DIN FEMALE POSITIVE STOP CONNECTOR	\$39.31	0%	\$78.62
5	7/8" SUREGROUND GROUNDING	\$34.84	0%	\$174.20
2	7/8" SUPPORT HOIST GRIP	\$55.50	0%	\$111.00
7	7/8" CABLE HANGER KIT 10 PACK	\$28.08	0%	\$196.56
25	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$73.75
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
1	VHF OMNI ANTENNA, 6 DBD, V-POL	\$1,450.00	0%	\$1,450.00
15	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$44.25
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
2	CABLE WRAP WEATHERPROOFING	\$32.21	0%	\$64.42
200	CABLE: 7/8" AVA HELIAX POLY JKT PER FOOT	\$8.37	0%	\$1,674.00
2	7/8" 7 - 16 DIN FEMALE POSITIVE STOP CONNECTOR	\$39.31	0%	\$78.62
5	7/8" SUREGROUND GROUNDING	\$34.84	0%	\$174.20
2	7/8" SUPPORT HOIST GRIP	\$55.50	0%	\$111.00
7	7/8" CABLE HANGER KIT 10 PACK	\$28.08	0%	\$196.56
25	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$73.75
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
1	UHF OMNI ANTENNA, 6 DBD, V-POL	\$1,154.00	0%	\$1,154.00
15	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$44.25
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
2	CABLE WRAP WEATHERPROOFING	\$32.21	0%	\$64.42
200	CABLE: 7/8" AVA HELIAX POLY JKT PER FOOT	\$8.37	0%	\$1,674.00
2	7/8" 7 - 16 DIN FEMALE POSITIVE STOP CONNECTOR	\$39.31	0%	\$78.62
5	7/8" SUREGROUND GROUNDING	\$34.84	0%	\$174.20
2	7/8" SUPPORT HOIST GRIP	\$55.50	0%	\$111.00
7	7/8" CABLE HANGER KIT 10 PACK	\$28.08	0%	\$196.56
25	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$73.75
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
1	UHF OMNI ANTENNA, 6 DBD, V-POL	\$1,154.00	0%	\$1,154.00
15	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$44.25
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
2	CABLE WRAP WEATHERPROOFING	\$32.21	0%	\$64.42
200	CABLE: 7/8" AVA HELIAX POLY JKT PER FOOT	\$8.37	0%	\$1,674.00
2	7/8" 7 - 16 DIN FEMALE POSITIVE STOP CONNECTOR	\$39.31	0%	\$78.62
5	7/8" SUREGROUND GROUNDING	\$34.84	0%	\$174.20
2	7/8" SUPPORT HOIST GRIP	\$55.50	0%	\$111.00
7	7/8" CABLE HANGER KIT 10 PACK	\$28.08	0%	\$196.56
25	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$2.95	0%	\$73.75
2	1/2" 7 - 16 DIN MALE POSITIVE STOP CONNECTOR	\$26.00	0%	\$52.00
1	48 VDC RECTIFIER/DC DISTRIBUTION SYSTEM	\$36,680.00	0%	\$36,680.00
1	48 VDC VRLA BATTERY PLANT	\$45,000.00	0%	\$45,000.00
1	48 VDC WIRING	\$12,000.00	0%	\$12,000.00
1	SPILL CONTAINMENT	\$5,000.00	0%	\$5,000.00
1	HIGH-SEISMIC RACK	\$2,000.00	0%	\$2,000.00
			Total	\$755,950.08

Sheet 4 -King County P25 Radio System Dispatch System Cost Estimate

King County P25 Phase 2 Radio System Cost Estimate

KING COUNTY P25 PHASE 2 800 MHz RADIO SYSTEM - DISPATCH SYSTEM COST ESTIMATE
 SYSTEM: KING COUNTY P25 PHASE 2 800 MHz RADIO SYSTEM

PREPARED BY: Greg Forrest
 CHECKED BY: Tom Eckels

Date: 06-Jan-12
 Date:

Average Labor Rate = /Hr.

Item	Description	Port	Seattle Sub-Region	King County Sub-Region	Valley Com Sub-Region	EPSCA Sub-Region	Qty	Unit	Material		Labor			Subcontract		Unit Cost	Extended Total
									Unit Cost	Extended Amount	Unit MH	Unit Cost	Extended Amount	Unit Cost	Extended Amount		
1	Dispatch Workstation Application License, AES, soft instant recall recorder (IRR)	23	34	29	21	22	129	each	\$39,100.00	\$5,043,900.00		\$0.00	\$0.00		\$0.00	\$39,100.00	\$5,043,900.00
2	Dispatch Workstation (1 position), CPU, voice interface module, 19" LCD non-touch screen; Keyboard and mouse, dual speakers, footswitch	23	34	29	21	22	129	each	\$8,927.00	\$1,151,583.00		\$0.00	\$0.00		\$0.00	\$8,927.00	\$1,151,583.00
3	Conventional Channel Interface (CCI; 4 Ch. 4WE&M / V.24)	1	5	7	2	5	20	each	\$4,960.00	\$99,200.00		\$0.00	\$0.00		\$0.00	\$4,960.00	\$99,200.00
4	Auxiliary Input/Output Device, IP (alarm/door controls); application software license, basic	2	5	7	2	5	21	each	\$2,240.00	\$47,040.00		\$0.00	\$0.00		\$0.00	\$2,240.00	\$47,040.00
5	Control Station, Backup, 700/800 MHz, P25 PII TDMA, rack mount 20W; desktop control w/microphone	28	44	36	26	28	162	each	\$8,453.00	\$1,369,386.00		\$0.00	\$0.00		\$0.00	\$8,453.00	\$1,369,386.00
6	Control Station Antenna System, 746-869 MHz omni, 0 dBd with transmission line, connectors, hoist and ground kit	5	14	14	5	10	48	each	\$1,902.00	\$91,296.00		\$0.00	\$0.00		\$0.00	\$1,902.00	\$91,296.00
7	Control station combiner, 746-960 MHz, eight port; single 800 MHz window filter (requires two antennas above)	4	5	7	4	5	25	each	\$10,648.48	\$266,212.00		\$0.00	\$0.00		\$0.00	\$10,648.48	\$266,212.00
8	Receiver multicoupler, 16-port; 120 VAC, single receive filter (800 MHz); requires one antenna above.	1	0	0	1	0	2	each	\$4,639.14	\$9,278.28		\$0.00	\$0.00		\$0.00	\$4,639.14	\$9,278.28
9	Ethernet Switch, Managed, 24-Port, Rack Mount	2	10	14	2	6	34	each	\$2,250.00	\$76,500.00		\$0.00	\$0.00		\$0.00	\$2,250.00	\$76,500.00
10	Router, Ethernet/T1 Interface, multi-protocol; AES; 4 port	2	10	14	2	6	34	each	\$19,993.00	\$679,762.00		\$0.00	\$0.00		\$0.00	\$19,993.00	\$679,762.00
11	TVSS, 120 VAC, Rack-Mount eight-circuit	2	10	14	2	5	33	each	\$1,091.00	\$36,003.00		\$0.00	\$0.00		\$0.00	\$1,091.00	\$36,003.00
12	Misc. site hardware, cables	2	10	14	2	5	33	lot	\$1,500.00	\$49,500.00		\$0.00	\$0.00		\$0.00	\$1,500.00	\$49,500.00
13	Conventional Site Controller	1	5	7	1	4	18	each	\$12,084.00	\$217,512.00		\$0.00	\$0.00		\$0.00	\$12,084.00	\$217,512.00
14	Ethernet TVSS, eight-wire, rack mounted	2	10	14	2	6	34	each	\$242.00	\$8,228.00		\$0.00	\$0.00		\$0.00	\$242.00	\$8,228.00
15	Misc. Spare Equipment (per site)	4	5	7	4	5	25	lot	\$3,000.00	\$75,000.00		\$0.00	\$0.00		\$0.00	\$3,000.00	\$75,000.00
16	Dispatch Logging Application License, AES (per site)	1	5	7	3	4	20	each	\$34,580.00	\$691,600.00		\$0.00	\$0.00		\$0.00	\$34,580.00	\$691,600.00
17	Console logger interface for AES voice encryption, rack-mount	1	5	7	3	4	20	each	\$2,785.00	\$55,700.00		\$0.00	\$0.00		\$0.00	\$2,785.00	\$55,700.00
18	Not Used	0	0	0	0	0	0	each		\$0.00		\$0.00	\$0.00		\$0.00	\$0.00	\$0.00
19	Not Used	0	0	0	0	0	0	each		\$0.00		\$0.00	\$0.00		\$0.00	\$0.00	\$0.00
20	Logging recorder, Digital IP, 30 calls, rack mount (no playback station)	0	5	7	0	3	15	each	\$80,073.00	\$1,201,095.00		\$0.00	\$0.00		\$0.00	\$80,073.00	\$1,201,095.00
21	Logging recorder interface to Master Site (for trunked radio traffic)	0	0	0	0	0	0	each	\$26,886.40	\$0.00		\$0.00	\$0.00		\$0.00	\$26,886.40	\$0.00
22	Digital IP Logging Recorder, 120 channel (max), rack mount; incl. remote replay application and playback station (Qty. 1)	1	0	0	1	1	3	each	\$104,822.80	\$314,468.40		\$0.00	\$0.00		\$0.00	\$104,822.80	\$314,468.40
23	Playback Workstation, CPU, 19" LCD non-touch monitor, windows, playback application, mouse, keyboard	2	5	7	2	4	20	each	\$5,261.00	\$105,220.00		\$0.00	\$0.00		\$0.00	\$5,261.00	\$105,220.00
24	KVM switch, eight-port, PS2/USB/VGA	2	5	7	2	5	21	each	\$726.00	\$15,246.00		\$0.00	\$0.00		\$0.00	\$726.00	\$15,246.00
25		0	0	0	0	0	0	each		\$0.00		\$0.00	\$0.00		\$0.00	\$0.00	\$0.00
26		0	0	0	0	0	0	each		\$0.00		\$0.00	\$0.00		\$0.00	\$0.00	\$0.00
27		0	0	0	0	0	0	each		\$0.00		\$0.00	\$0.00		\$0.00	\$0.00	\$0.00
										\$11,603,729.68							\$11,603,729.68
																	\$348,111.89
																	\$11,951,841.57

DISPATCH SYSTEMS TOTAL \$11,951,850.00

King County P25 Phase 2 Radio System Cost Estimate

KING COUNTY P25 PHASE 2 800 MHz RADIO SYSTEM - DISPATCH SYSTEM COST ESTIMATE
SYSTEM: PORT OF SEATTLE

PREPARED BY: **Greg Forrest**
 CHECKED BY: **Tom Eckels**

Date: **28-Dec-11**
 Date:

Average Labor Rate = \$0.00 /Hr.

Year 2011\$

Item	Description	Center 1	Center 2	Center 3	Center 4	Center 5	Center 6	Center 7	Center Qty	Unit	Material		Labor			Subcontract		Unit Cost	Extended Total
											Unit Cost	Extended Amount	Unit MH	Unit Cost	Extended Amount	Unit Cost	Extended Amount		
1	Dispatch Workstation Application License, AES, soft instant recall recorder (IRR)	23							23	each	\$ 39,100.00	\$ 899,300.00	0.000	0.00	0.00	0.00	0.00	\$ 39,100.00	\$ 899,300.00
2	Dispatch Workstation (1 position), CPU, voice interface module, 19" LCD non-touch screen; Keyboard and mouse, dual speakers, footswitch	23							23	each	\$ 8,927.00	\$ 205,321.00	0.000	0.00	0.00	0.00	0.00	\$ 8,927.00	\$ 205,321.00
3	Conventional Channel Interface (CCI; 4 Ch. 4WE&M / V.24)	1							1	each	\$ 4,960.00	\$ 4,960.00	0.000	0.00	0.00	0.00	0.00	\$ 4,960.00	\$ 4,960.00
4	Auxiliary Input/Output Device, IP (alarm/door controls); application software license, basic	2							2	each	\$ 2,240.00	\$ 4,480.00	0.000	0.00	0.00	0.00	0.00	\$ 2,240.00	\$ 4,480.00
5	Control Station, Backup, 700/800 MHz, P25 PII TDMA, rack mount 20W; desktop control w/microphone	28							28	each	\$ 8,453.00	\$ 236,684.00	0.000	0.00	0.00	0.00	0.00	\$ 8,453.00	\$ 236,684.00
6	Control Station Antenna System, 746-869 MHz omni, 0 dBd with transmission line, connectors, hoist and ground kit	5							5	each	\$ 1,902.00	\$ 9,510.00	0.000	0.00	0.00	0.00	0.00	\$ 1,902.00	\$ 9,510.00
7	Control station combiner, 746-960 MHz, eight port; single 800 MHz window filter (requires two antennas above)	4							4	each	\$ 10,648.48	\$ 42,593.92	0.000	0.00	0.00	0.00	0.00	\$ 10,648.48	\$ 42,593.92
8	Receiver multicoupler, 16-port; 120 VAC, single receive filter (800 MHz); requires one antenna above.	1							1	each	\$ 4,639.14	\$ 4,639.14	0.000	0.00	0.00	0.00	0.00	\$ 4,639.14	\$ 4,639.14
9	Ethernet Switch, Managed, 24-Port, Rack Mount	2							2	each	\$ 2,250.00	\$ 4,500.00	0.000	0.00	0.00	0.00	0.00	\$ 2,250.00	\$ 4,500.00
10	Router, Ethernet/T1 Interface, multi-protocol; AES; 4 port	2							2	each	\$ 19,993.00	\$ 39,986.00	0.000	0.00	0.00	0.00	0.00	\$ 19,993.00	\$ 39,986.00
11	TVSS, 120 VAC, Rack-Mount eight-circuit	2							2	each	\$ 1,091.00	\$ 2,182.00	0.000	0.00	0.00	0.00	0.00	\$ 1,091.00	\$ 2,182.00
12	Misc. site hardware, cables	2							2	lot	\$ 1,500.00	\$ 3,000.00	0.000	0.00	0.00	0.00	0.00	\$ 1,500.00	\$ 3,000.00
13	Conventional Site Controller	1							1	each	\$ 12,084.00	\$ 12,084.00	0.000	0.00	0.00	0.00	0.00	\$ 12,084.00	\$ 12,084.00
14	Ethernet TVSS, eight-wire, rack mounted	2							2	each	\$ 242.00	\$ 484.00	0.000	0.00	0.00	0.00	0.00	\$ 242.00	\$ 484.00
15	Misc. Spare Equipment (per site)	4							4	lot	\$ 3,000.00	\$ 12,000.00	0.000	0.00	0.00	0.00	0.00	\$ 3,000.00	\$ 12,000.00
16	Dispatch Logging Application License, AES (per site)	1							1	each	\$ 34,580.00	\$ 34,580.00	0.000	0.00	0.00	0.00	0.00	\$ 34,580.00	\$ 34,580.00
17	Console logger interface for AES voice encryption, rack-mount	1							1	each	\$ 2,785.00	\$ 2,785.00	0.000	0.00	0.00	0.00	0.00	\$ 2,785.00	\$ 2,785.00
18	Not Used								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
19	Not Used								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
20	Logging recorder, Digital IP, 30 calls, rack mount (no playback station)								0	each	\$ 80,073.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 80,073.00	\$ -
21	Logging recorder interface to Master Site (for trunked radio traffic)								0	each	\$ 26,886.40	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 26,886.40	\$ -
22	Digital IP Logging Recorder, 120 channel (max), rack mount; incl. remote replay application and playback station (Qty. 1)	1							1	each	\$104,822.80	\$ 104,822.80	0.000	0.00	0.00	0.00	0.00	\$ 104,822.80	\$ 104,822.80
23	Playback Workstation, CPU, 19" LCD non-touch monitor, windows, playback application, mouse, keyboard	2							2	each	\$ 5,261.00	\$ 10,522.00	0.000	0.00	0.00	0.00	0.00	\$ 5,261.00	\$ 10,522.00
24	KVM switch, eight-port, PS2/USB/VGA	2							2	each	\$ 726.00	\$ 1,452.00	0.000	0.00	0.00	0.00	0.00	\$ 726.00	\$ 1,452.00
25	\$0								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
26	\$0								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
27	\$0								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
	Total											\$ 1,635,885.86			0.00		0.00		\$ 1,635,885.86

King County P25 Phase 2 Radio System Cost Estimate

KING COUNTY P25 PHASE 2 800 MHz RADIO SYSTEM - DISPATCH SYSTEM COST ESTIMATE
 SYSTEM: Seattle Sub-Region

PREPARED BY: Greg Forrest
 CHECKED BY: Tom Eckels

Date: 28-Dec-11
 Date:

Average Labor Rate = \$0.00 /Hr.

Year 2011\$

Item	Description	Center 1	Center 2	Center 3	Center 4	Center 5	Center 6	Center 7	Center Qty	Unit	Material		Labor			Subcontract		Unit Cost	Extended Total
											Unit Cost	Extended Amount	Unit MH	Unit Cost	Extended Amount	Unit Cost	Extended Amount		
1	Dispatch Workstation Application License, AES, soft instant recall recorder (IRR)	7	7	7	7	6			34	each	\$ 39,100.00	\$ 1,329,400.00	0.000	0.00	0.00	0.00	0.00	\$ 39,100.00	\$ 1,329,400.00
2	Dispatch Workstation (1 position), CPU, voice interface module, 19" LCD non-touch screen; Keyboard and mouse, dual speakers, footswitch	7	7	7	7	6			34	each	\$ 8,927.00	\$ 303,518.00	0.000	0.00	0.00	0.00	0.00	\$ 8,927.00	\$ 303,518.00
3	Conventional Channel Interface (CCI; 4 Ch. 4WE&M / V.24)	1	1	1	1	1			5	each	\$ 4,960.00	\$ 24,800.00	0.000	0.00	0.00	0.00	0.00	\$ 4,960.00	\$ 24,800.00
4	Auxiliary Input/Output Device, IP (alarm/door controls); application software license, basic	1	1	1	1	1			5	each	\$ 2,240.00	\$ 11,200.00	0.000	0.00	0.00	0.00	0.00	\$ 2,240.00	\$ 11,200.00
5	Control Station, Backup, 700/800 MHz, P25 PII TDMA, rack mount 20W; desktop control w/microphone	9	9	9	9	8			44	each	\$ 8,453.00	\$ 371,932.00	0.000	0.00	0.00	0.00	0.00	\$ 8,453.00	\$ 371,932.00
6	Control Station Antenna System, 746-869 MHz omni, 0 dBd with transmission line, connectors, hoist and ground kit	3	3	3	3	2			14	each	\$ 1,902.00	\$ 26,628.00	0.000	0.00	0.00	0.00	0.00	\$ 1,902.00	\$ 26,628.00
7	Control station combiner, 746-960 MHz, eight port; single 800 MHz window filter (requires two antennas above)	1	1	1	1	1			5	each	\$ 10,648.48	\$ 53,242.40	0.000	0.00	0.00	0.00	0.00	\$ 10,648.48	\$ 53,242.40
8	Receiver multicoupler, 16-port; 120 VAC, single receive filter (800 MHz); requires one antenna above.								0	each	\$ 4,639.14	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 4,639.14	\$ -
9	Ethernet Switch, Managed, 24-Port, Rack Mount	2	2	2	2	2			10	each	\$ 2,250.00	\$ 22,500.00	0.000	0.00	0.00	0.00	0.00	\$ 2,250.00	\$ 22,500.00
10	Router, Ethernet/T1 Interface, multi-protocol; AES; 4 ports	2	2	2	2	2			10	each	\$ 19,993.00	\$ 199,930.00	0.000	0.00	0.00	0.00	0.00	\$ 19,993.00	\$ 199,930.00
11	TVSS, 120 VAC, Rack-Mount eight-circuit	2	2	2	2	2			10	each	\$ 1,091.00	\$ 10,910.00	0.000	0.00	0.00	0.00	0.00	\$ 1,091.00	\$ 10,910.00
12	Misc. site hardware, cables	2	2	2	2	2			10	lot	\$ 1,500.00	\$ 15,000.00	0.000	0.00	0.00	0.00	0.00	\$ 1,500.00	\$ 15,000.00
13	Conventional Site Controller	1	1	1	1	1			5	each	\$ 12,084.00	\$ 60,420.00	0.000	0.00	0.00	0.00	0.00	\$ 12,084.00	\$ 60,420.00
14	Ethernet TVSS, eight-wire, rack mounted	2	2	2	2	2			10	each	\$ 242.00	\$ 2,420.00	0.000	0.00	0.00	0.00	0.00	\$ 242.00	\$ 2,420.00
15	Misc. Spare Equipment (per site)	1	1	1	1	1			5	lot	\$ 3,000.00	\$ 15,000.00	0.000	0.00	0.00	0.00	0.00	\$ 3,000.00	\$ 15,000.00
16	Dispatch Logging Application License, AES (per site)	1	1	1	1	1			5	each	\$ 34,580.00	\$ 172,900.00	0.000	0.00	0.00	0.00	0.00	\$ 34,580.00	\$ 172,900.00
17	Console logger interface for AES voice encryption, rack-mount	1	1	1	1	1			5	each	\$ 2,785.00	\$ 13,925.00	0.000	0.00	0.00	0.00	0.00	\$ 2,785.00	\$ 13,925.00
18	Not Used								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
19	Not Used								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
20	Logging recorder, Digital IP, 30 calls, rack mount (no playback station)	1	1	1	1	1			5	each	\$ 80,073.00	\$ 400,365.00	0.000	0.00	0.00	0.00	0.00	\$ 80,073.00	\$ 400,365.00
21	Logging recorder interface to Master Site (for trunked radio traffic)								0	each	\$ 26,886.40	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 26,886.40	\$ -
22	Digital IP Logging Recorder, 120 channel (max), rack mount; incl. remote replay application and playback station (Qty. 1)								0	each	\$104,822.80	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 104,822.80	\$ -
23	Playback Workstation, CPU, 19" LCD non-touch monitor, windows, playback application, mouse, keyboard	1	1	1	1	1			5	each	\$ 5,261.00	\$ 26,305.00	0.000	0.00	0.00	0.00	0.00	\$ 5,261.00	\$ 26,305.00
24	KVM switch, eight-port, PS2/USB/VGA	1	1	1	1	1			5	each	\$ 726.00	\$ 3,630.00	0.000	0.00	0.00	0.00	0.00	\$ 726.00	\$ 3,630.00
25	\$0								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
26	\$0								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
27	\$0								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
	Total											\$ 3,064,025.40			0.00		0.00		\$ 3,064,025.40

King County P25 Phase 2 Radio System Cost Estimate

KING COUNTY P25 PHASE 2 800 MHZ RADIO SYSTEM - DISPATCH SYSTEM COST ESTIMATE
 SYSTEM: King County Sub-Region

PREPARED BY: Greg Forrest
 CHECKED BY: Tom Eckels

Date: 28-Dec-11
 Date:

Average Labor Rate = \$0.00 /Hr.

Year 2011\$

Item	Description	Center 1	Center 2	Center 3	Center 4	Center 5	Center 6	Center 7	Center Qty	Unit	Material		Labor			Subcontract		Unit Cost	Extended Total
											Unit Cost	Extended Amount	Unit MH	Unit Cost	Extended Amount	Unit Cost	Extended Amount		
1	Dispatch Workstation Application License, AES, soft instant recall recorder (IRR)	5	4	4	4	4	4	4	29	each	\$ 39,100.00	\$ 1,133,900.00	0.000	0.00	0.00	0.00	0.00	\$ 39,100.00	\$ 1,133,900.00
2	Dispatch Workstation (1 position), CPU, voice interface module, 19" LCD non-touch screen; Keyboard and mouse, dual speakers, footswitch	5	4	4	4	4	4	4	29	each	\$ 8,927.00	\$ 258,883.00	0.000	0.00	0.00	0.00	0.00	\$ 8,927.00	\$ 258,883.00
3	Conventional Channel Interface (CCI; 4 Ch. 4WE&M / V.24)	1	1	1	1	1	1	1	7	each	\$ 4,960.00	\$ 34,720.00	0.000	0.00	0.00	0.00	0.00	\$ 4,960.00	\$ 34,720.00
4	Auxiliary Input/Output Device, IP (alarm/door controls); application software license, basic	1	1	1	1	1	1	1	7	each	\$ 2,240.00	\$ 15,680.00	0.000	0.00	0.00	0.00	0.00	\$ 2,240.00	\$ 15,680.00
5	Control Station, Backup, 700/800 MHz, P25 PII TDMA, rack mount 20W; desktop control w/microphone	6	5	5	5	5	5	5	36	each	\$ 8,453.00	\$ 304,308.00	0.000	0.00	0.00	0.00	0.00	\$ 8,453.00	\$ 304,308.00
6	Control Station Antenna System, 746-869 MHz omni, 0 dBd with transmission line, connectors, hoist and ground kit	2	2	2	2	2	2	2	14	each	\$ 1,902.00	\$ 26,628.00	0.000	0.00	0.00	0.00	0.00	\$ 1,902.00	\$ 26,628.00
7	Control station combiner, 746-960 MHz, eight port; single 800 MHz window filter (requires two antennas above)	1	1	1	1	1	1	1	7	each	\$ 10,648.48	\$ 74,539.36	0.000	0.00	0.00	0.00	0.00	\$ 10,648.48	\$ 74,539.36
8	Receiver multicoupler, 16-port; 120 VAC, single receive filter (800 MHz); requires one antenna above.								0	each	\$ 4,639.14	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 4,639.14	\$ -
9	Ethernet Switch, Managed, 24-Port, Rack Mount	2	2	2	2	2	2	2	14	each	\$ 2,250.00	\$ 31,500.00	0.000	0.00	0.00	0.00	0.00	\$ 2,250.00	\$ 31,500.00
10	Router, Ethernet/T1 Interface, multi-protocol; AES; 4 ports	2	2	2	2	2	2	2	14	each	\$ 19,993.00	\$ 279,902.00	0.000	0.00	0.00	0.00	0.00	\$ 19,993.00	\$ 279,902.00
11	TVSS, 120 VAC, Rack-Mount eight-circuit	2	2	2	2	2	2	2	14	each	\$ 1,091.00	\$ 15,274.00	0.000	0.00	0.00	0.00	0.00	\$ 1,091.00	\$ 15,274.00
12	Misc. site hardware, cables	2	2	2	2	2	2	2	14	lot	\$ 1,500.00	\$ 21,000.00	0.000	0.00	0.00	0.00	0.00	\$ 1,500.00	\$ 21,000.00
13	Conventional Site Controller	1	1	1	1	1	1	1	7	each	\$ 12,084.00	\$ 84,588.00	0.000	0.00	0.00	0.00	0.00	\$ 12,084.00	\$ 84,588.00
14	Ethernet TVSS, eight-wire, rack mounted	2	2	2	2	2	2	2	14	each	\$ 242.00	\$ 3,388.00	0.000	0.00	0.00	0.00	0.00	\$ 242.00	\$ 3,388.00
15	Misc. Spare Equipment (per site)	1	1	1	1	1	1	1	7	lot	\$ 3,000.00	\$ 21,000.00	0.000	0.00	0.00	0.00	0.00	\$ 3,000.00	\$ 21,000.00
16	Dispatch Logging Application License, AES (per site)	1	1	1	1	1	1	1	7	each	\$ 34,580.00	\$ 242,060.00	0.000	0.00	0.00	0.00	0.00	\$ 34,580.00	\$ 242,060.00
17	Console logger interface for AES voice encryption, rack-mount	1	1	1	1	1	1	1	7	each	\$ 2,785.00	\$ 19,495.00	0.000	0.00	0.00	0.00	0.00	\$ 2,785.00	\$ 19,495.00
18	Not Used								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
19	Not Used								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
20	Logging recorder, Digital IP, 30 calls, rack mount (no playback station)	1	1	1	1	1	1	1	7	each	\$ 80,073.00	\$ 560,511.00	0.000	0.00	0.00	0.00	0.00	\$ 80,073.00	\$ 560,511.00
21	Logging recorder interface to Master Site (for trunked radio traffic)								0	each	\$ 26,886.40	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 26,886.40	\$ -
22	Digital IP Logging Recorder, 120 channel (max), rack mount; incl. remote replay application and playback station (Qty. 1)								0	each	\$ 104,822.80	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 104,822.80	\$ -
23	Playback Workstation, CPU, 19" LCD non-touch monitor, windows, playback application, mouse, keyboard	1	1	1	1	1	1	1	7	each	\$ 5,261.00	\$ 36,827.00	0.000	0.00	0.00	0.00	0.00	\$ 5,261.00	\$ 36,827.00
24	KVM switch, eight-port, PS2/USB/VGA	1	1	1	1	1	1	1	7	each	\$ 726.00	\$ 5,082.00	0.000	0.00	0.00	0.00	0.00	\$ 726.00	\$ 5,082.00
25	\$0								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
26	\$0								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
27	\$0								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
	Total											\$ 3,169,285.36			0.00		0.00		\$ 3,169,285.36

King County P25 Phase 2 Radio System Cost Estimate

KING COUNTY P25 PHASE 2 800 MHz RADIO SYSTEM - DISPATCH SYSTEM COST ESTIMATE
 SYSTEM: Valley Com Sub-Region

PREPARED BY: Greg Forrest
 CHECKED BY: Tom Eckels

Date: 28-Dec-11
 Date:

Average Labor Rate = \$0.00 /Hr.

Year 2011\$

Item	Description	Center 1	Center 2	Center 3	Center 4	Center 5	Center 6	Center 7	Center Qty	Unit	Material		Labor			Subcontract		Unit Cost	Extended Total
											Unit Cost	Extended Amount	Unit MH	Unit Cost	Extended Amount	Unit Cost	Extended Amount		
1	Dispatch Workstation Application License, AES, soft instant recall recorder (IRR)	21							21	each	\$ 39,100.00	\$ 821,100.00	0.000	0.00	0.00	0.00	0.00	\$ 39,100.00	\$ 821,100.00
2	Dispatch Workstation (1 position), CPU, voice interface module, 19" LCD non-touch screen; Keyboard and mouse, dual speakers, footswitch	21							21	each	\$ 8,927.00	\$ 187,467.00	0.000	0.00	0.00	0.00	0.00	\$ 8,927.00	\$ 187,467.00
3	Conventional Channel Interface (CCI; 4 Ch. 4WE&M / V.24)	2							2	each	\$ 4,960.00	\$ 9,920.00	0.000	0.00	0.00	0.00	0.00	\$ 4,960.00	\$ 9,920.00
4	Auxiliary Input/Output Device, IP (alarm/door controls); application software license, basic	2							2	each	\$ 2,240.00	\$ 4,480.00	0.000	0.00	0.00	0.00	0.00	\$ 2,240.00	\$ 4,480.00
5	Control Station, Backup, 700/800 MHz, P25 PII TDMA, rack mount 20W; desktop control w/microphone	26							26	each	\$ 8,453.00	\$ 219,778.00	0.000	0.00	0.00	0.00	0.00	\$ 8,453.00	\$ 219,778.00
6	Control Station Antenna System, 746-869 MHz omni, 0 dBd with transmission line, connectors, hoist and ground kit	5							5	each	\$ 1,902.00	\$ 9,510.00	0.000	0.00	0.00	0.00	0.00	\$ 1,902.00	\$ 9,510.00
7	Control station combiner, 746-960 MHz, eight port; single 800 MHz window filter (requires two antennas above)	4							4	each	\$ 10,648.48	\$ 42,593.92	0.000	0.00	0.00	0.00	0.00	\$ 10,648.48	\$ 42,593.92
8	Receiver multicoupler, 16-port; 120 VAC, single receive filter (800 MHz); requires one antenna above.	1							1	each	\$ 4,639.14	\$ 4,639.14	0.000	0.00	0.00	0.00	0.00	\$ 4,639.14	\$ 4,639.14
9	Ethernet Switch, Managed, 24-Port, Rack Mount	2							2	each	\$ 2,250.00	\$ 4,500.00	0.000	0.00	0.00	0.00	0.00	\$ 2,250.00	\$ 4,500.00
10	Router, Ethernet/T1 Interface, multi-protocol; AES; 4 port	2							2	each	\$ 19,993.00	\$ 39,986.00	0.000	0.00	0.00	0.00	0.00	\$ 19,993.00	\$ 39,986.00
11	TVSS, 120 VAC, Rack-Mount eight-circuit	2							2	each	\$ 1,091.00	\$ 2,182.00	0.000	0.00	0.00	0.00	0.00	\$ 1,091.00	\$ 2,182.00
12	Misc. site hardware, cables	2							2	lot	\$ 1,500.00	\$ 3,000.00	0.000	0.00	0.00	0.00	0.00	\$ 1,500.00	\$ 3,000.00
13	Conventional Site Controller	1							1	each	\$ 12,084.00	\$ 12,084.00	0.000	0.00	0.00	0.00	0.00	\$ 12,084.00	\$ 12,084.00
14	Ethernet TVSS, eight-wire, rack mounted	2							2	each	\$ 242.00	\$ 484.00	0.000	0.00	0.00	0.00	0.00	\$ 242.00	\$ 484.00
15	Misc. Spare Equipment (per site)	4							4	lot	\$ 3,000.00	\$ 12,000.00	0.000	0.00	0.00	0.00	0.00	\$ 3,000.00	\$ 12,000.00
16	Dispatch Logging Application License, AES (per site)	3							3	each	\$ 34,580.00	\$ 103,740.00	0.000	0.00	0.00	0.00	0.00	\$ 34,580.00	\$ 103,740.00
17	Console logger interface for AES voice encryption, rack-mount	3							3	each	\$ 2,785.00	\$ 8,355.00	0.000	0.00	0.00	0.00	0.00	\$ 2,785.00	\$ 8,355.00
18	Not Used								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
19	Not Used								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
20	Logging recorder, Digital IP, 30 calls, rack mount (no playback station)								0	each	\$ 80,073.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 80,073.00	\$ -
21	Logging recorder interface to Master Site (for trunked radio traffic)								0	each	\$ 26,886.40	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 26,886.40	\$ -
22	Digital IP Logging Recorder, 120 channel (max), rack mount; incl. remote replay application and playback station (Qty. 1)	1							1	each	\$ 104,822.80	\$ 104,822.80	0.000	0.00	0.00	0.00	0.00	\$ 104,822.80	\$ 104,822.80
23	Playback Workstation, CPU, 19" LCD non-touch monitor, windows, playback application, mouse, keyboard	2							2	each	\$ 5,261.00	\$ 10,522.00	0.000	0.00	0.00	0.00	0.00	\$ 5,261.00	\$ 10,522.00
24	KVM switch, eight-port, PS2/USB/VGA	2							2	each	\$ 726.00	\$ 1,452.00	0.000	0.00	0.00	0.00	0.00	\$ 726.00	\$ 1,452.00
25	\$0								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
26	\$0								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
27	\$0								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
	Total											\$ 1,602,615.86			0.00		0.00		\$ 1,602,615.86

King County P25 Phase 2 Radio System Cost Estimate

KING COUNTY P25 PHASE 2 800 MHz RADIO SYSTEM - DISPATCH SYSTEM COST ESTIMATE
 SYSTEM: EPSCA Sub-Region

PREPARED BY: Greg Forrest
 CHECKED BY: Tom Eckels

Date: 28-Dec-11
 Date:

#NAME?		Average Labor Rate = \$0.00 /Hr.										Year 2011\$							
Item	Description	Center 1	Center 2	Center 3	Center 4	Center 5	Center 6	Center 7	Center Qty	Unit	Material		Labor			Subcontract		Unit Cost	Extended Total
											Unit Cost	Extended Amount	Unit MH	Unit Cost	Extended Amount	Unit Cost	Extended Amount		
1	Dispatch Workstation Application License, AES, soft instant recall recorder (IRR)	12	4	3	3				22	each	\$ 39,100.00	\$ 860,200.00	0.000	0.00	0.00	0.00	0.00	\$ 39,100.00	\$ 860,200.00
2	Dispatch Workstation (1 position), CPU, voice interface module, 19" LCD non-touch screen; Keyboard and mouse, dual speakers, footswitch	12	4	3	3				22	each	\$ 8,927.00	\$ 196,394.00	0.000	0.00	0.00	0.00	0.00	\$ 8,927.00	\$ 196,394.00
3	Conventional Channel Interface (CCI; 4 Ch. 4WE&M / V.24)	2	1	1	1				5	each	\$ 4,960.00	\$ 24,800.00	0.000	0.00	0.00	0.00	0.00	\$ 4,960.00	\$ 24,800.00
4	Auxiliary Input/Output Device, IP (alarm/door controls); application software license, basic	2	1	1	1				5	each	\$ 2,240.00	\$ 11,200.00	0.000	0.00	0.00	0.00	0.00	\$ 2,240.00	\$ 11,200.00
5	Control Station, Backup, 700/800 MHz, P25 PII TDMA, rack mount 20W; desktop control w/microphone	15	5	4	4				28	each	\$ 8,453.00	\$ 236,684.00	0.000	0.00	0.00	0.00	0.00	\$ 8,453.00	\$ 236,684.00
6	Control Station Antenna System, 746-869 MHz omni, 0 dBd with transmission line, connectors, hoist and ground kit	4	2	2	2				10	each	\$ 1,902.00	\$ 19,020.00	0.000	0.00	0.00	0.00	0.00	\$ 1,902.00	\$ 19,020.00
7	Control station combiner, 746-960 MHz, eight port; single 800 MHz window filter (requires two antennas above)	2	1	1	1				5	each	\$ 10,648.48	\$ 53,242.40	0.000	0.00	0.00	0.00	0.00	\$ 10,648.48	\$ 53,242.40
8	Receiver multicoupler, 16-port; 120 VAC, single receive filter (800 MHz); requires one antenna above.								0	each	\$ 4,639.14	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 4,639.14	\$ -
9	Ethernet Switch, Managed, 24-Port, Rack Mount	2	2	1	1				6	each	\$ 2,250.00	\$ 13,500.00	0.000	0.00	0.00	0.00	0.00	\$ 2,250.00	\$ 13,500.00
10	Router, Ethernet/T1 Interface, multi-protocol; AES; 4 port	2	2	1	1				6	each	\$ 19,993.00	\$ 119,958.00	0.000	0.00	0.00	0.00	0.00	\$ 19,993.00	\$ 119,958.00
11	TVSS, 120 VAC, Rack-Mount eight-circuit	2	1	1	1				5	each	\$ 1,091.00	\$ 5,455.00	0.000	0.00	0.00	0.00	0.00	\$ 1,091.00	\$ 5,455.00
12	Misc. site hardware, cables	2	1	1	1				5	lot	\$ 1,500.00	\$ 7,500.00	0.000	0.00	0.00	0.00	0.00	\$ 1,500.00	\$ 7,500.00
13	Conventional Site Controller	1	1	1	1				4	each	\$ 12,084.00	\$ 48,336.00	0.000	0.00	0.00	0.00	0.00	\$ 12,084.00	\$ 48,336.00
14	Ethernet TVSS, eight-wire, rack mounted	2	2	1	1				6	each	\$ 242.00	\$ 1,452.00	0.000	0.00	0.00	0.00	0.00	\$ 242.00	\$ 1,452.00
15	Misc. Spare Equipment (per site)	2	1	1	1				5	lot	\$ 3,000.00	\$ 15,000.00	0.000	0.00	0.00	0.00	0.00	\$ 3,000.00	\$ 15,000.00
16	Dispatch Logging Application License, AES (per site)	1	1	1	1				4	each	\$ 34,580.00	\$ 138,320.00	0.000	0.00	0.00	0.00	0.00	\$ 34,580.00	\$ 138,320.00
17	Console logger interface for AES voice encryption, rack-mount	1	1	1	1				4	each	\$ 2,785.00	\$ 11,140.00	0.000	0.00	0.00	0.00	0.00	\$ 2,785.00	\$ 11,140.00
18	Not Used								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
19	Not Used								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
20	Logging recorder, Digital IP, 30 calls, rack mount (no playback station)		1	1	1				3	each	\$ 80,073.00	\$ 240,219.00	0.000	0.00	0.00	0.00	0.00	\$ 80,073.00	\$ 240,219.00
21	Logging recorder interface to Master Site (for trunked radio traffic)								0	each	\$ 26,886.40	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 26,886.40	\$ -
22	Digital IP Logging Recorder, 120 channel (max), rack mount; incl. remote replay application and playback station (Qty. 1)	1							1	each	\$ 104,822.80	\$ 104,822.80	0.000	0.00	0.00	0.00	0.00	\$ 104,822.80	\$ 104,822.80
23	Playback Workstation, CPU, 19" LCD non-touch monitor, windows, playback application, mouse, keyboard	1	1	1	1				4	each	\$ 5,261.00	\$ 21,044.00	0.000	0.00	0.00	0.00	0.00	\$ 5,261.00	\$ 21,044.00
24	KVM switch, eight-port, PS2/USB/VGA	2	1	1	1				5	each	\$ 726.00	\$ 3,630.00	0.000	0.00	0.00	0.00	0.00	\$ 726.00	\$ 3,630.00
25	\$0								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
26	\$0								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
27	\$0								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
	Total											\$ 2,131,917.20			0.00		0.00		\$ 2,131,917.20

King County P25 Phase 2 Radio System Cost Estimate

KING COUNTY P25 PHASE 2 800 MHz RADIO SYSTEM - DISPATCH SYSTEM COST ESTIMATE

SYSTEM: SPARES

NOTE: Spare costs are included in the individual sub-system worksheets

PREPARED BY:

CHECKED BY:

Date: **28-Dec-11**

Date:

Average Labor Rate = \$0.00 /Hr.

Year 2011\$

Item	Description	Center 1	Center 2	Center 3	Center 4	Center 5	Center 6	Center 7	Center Qty	Unit	Material		Labor		Subcontract		Unit Cost	Extended Total	
											Unit Cost	Extended Amount	Unit MH	Unit Cost	Extended Amount	Unit Cost			Extended Amount
1	Dispatch Workstation Application License, AES, soft instant recall recorder (IRR)								0	each	\$ 39,100.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 39,100.00	\$ -
2	Dispatch Workstation (1 position), CPU, voice interface module, 19" LCD non-touch screen; Keyboard and mouse, dual speakers, footswitch								0	each	\$ 8,927.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 8,927.00	\$ -
3	Conventional Channel Interface (CCI; 4 Ch. 4WE&M / V.24)								0	each	\$ 4,960.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 4,960.00	\$ -
4	Auxiliary Input/Output Device, IP (alarm/door controls); application software license, basic								0	each	\$ 2,240.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 2,240.00	\$ -
5	Control Station, Backup, 700/800 MHz, P25 PII TDMA, rack mount 20W; desktop control w/microphone								0	each	\$ 8,453.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 8,453.00	\$ -
6	Control Station Antenna System, 746-869 MHz omni, 0 dBd with transmission line, connectors, hoist and ground kit								0	each	\$ 1,902.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 1,902.00	\$ -
7	Control station combiner, 746-960 MHz, eight port; single 800 MHz window filter (requires two antennas above)								0	each	\$ 10,648.48	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 10,648.48	\$ -
8	Receiver multicoupler, 16-port; 120 VAC, single receive filter (800 MHz); requires one antenna above.								0	each	\$ 4,639.14	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 4,639.14	\$ -
9	Ethernet Switch, Managed, 24-Port, Rack Mount								0	each	\$ 2,250.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 2,250.00	\$ -
10	Router, Ethernet/T1 Interface, multi-protocol; AES; 4 port								0	each	\$ 19,993.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 19,993.00	\$ -
11	TVSS, 120 VAC, Rack-Mount eight-circuit								0	each	\$ 1,091.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 1,091.00	\$ -
12	Misc. site hardware, cables								0	lot	\$ 1,500.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 1,500.00	\$ -
13	Conventional Site Controller								0	each	\$ 12,084.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 12,084.00	\$ -
14	Ethernet TVSS, eight-wire, rack mounted								0	each	\$ 242.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 242.00	\$ -
15	Misc. Spare Equipment (per site)								0	lot	\$ 3,000.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 3,000.00	\$ -
16	Dispatch Logging Application License, AES (per site)								0	each	\$ 34,580.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 34,580.00	\$ -
17	Console logger interface for AES voice encryption, rack mount								0	each	\$ 2,785.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 2,785.00	\$ -
18	Not Used								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
19	Not Used								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
20	Logging recorder, Digital IP, 30 calls, rack mount (no playback station)								0	each	\$ 80,073.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 80,073.00	\$ -
21	Logging recorder interface to Master Site (for trunked radio traffic)								0	each	\$ 26,886.40	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 26,886.40	\$ -
22	Digital IP Logging Recorder, 120 channel (max), rack mount; incl. remote replay application and playback station (Qty. 1)								0	each	\$104,822.80	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 104,822.80	\$ -
23	Playback Workstation, CPU, 19" LCD non-touch monitor, windows, playback application, mouse, keyboard								0	each	\$ 5,261.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 5,261.00	\$ -
24	KVM switch, eight-port, PS2/USB/VGA								0	each	\$ 726.00	\$ -	0.000	0.00	0.00	0.00	0.00	\$ 726.00	\$ -
25	\$0								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
26	\$0								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
27	\$0								0	each	\$ -	\$ -	0.000	0.00	0.00	0.00	0.00	\$ -	\$ -
	Total											\$ -			0.00		0.00		\$ -

King County P25 Phase 2 Radio System Cost Estimate

KING COUNTY P25 PHASE 2 TRUNKED RADIO SYSTEM - DISPATCH SYSTEM COST ESTIMATE

SYSTEM: KING COUNTY P25 PHASE 2 SYSTEM

PREPARED BY: Greg Forrest

Date: 28-Dec-11

CHECKED BY: Tom Eckels

Date:

Assumptions & Source

Item	Description	Source	No.	Assumptions
1	Dispatch Workstation Application License, AES, soft instant recall recorder (IRR)	Motorola	1	B1905 MCC 7500 ASTRO 25 SOFTWARE
2	Dispatch Workstation (1 position), CPU, voice interface module, 19" LCD non-touch screen; Keyboard and mouse, dual speakers, footswitch	Motorola	2	DDN9650 MCC7500
3	Conventional Channel Interface (CCI; 4 Ch. 4WE&M V.24)	Motorola	3	GGM8000
4	Auxiliary Input/Output Device, IP (alarm/door controls); application software license, basic	Motorola	4	F4543 SDM3000 RTU
5	Control Station, Backup, 700/800 MHz, P25 PII TDMA, rack mount 20W; desktop control w/microphone	Motorola	5	APX7500
6	Control Station Antenna System, 746-869 MHz omni, 0 dBd with transmission line, connectors, hoist and ground kit	Motorola	6	Previous Proposals
7	Control station combiner, 746-960 MHz, eight port; single 800 MHz window filter (requires two antennas above)	DB-Spectra	7	Qty. 1 - HC111W1-08F; Qty 1 - DB4258S10WT (or similar), w/rack mounting
8	Receiver multicoupler, 16-port; 120 VAC, single receive filter (800 MHz); requires one antenna above	DB-Spectra	8	Qty 1: DBSMC1-16C, Qty 1 - DB4258S10WT (or similar), w/rack mounting
9	Ethernet Switch, Managed, 24-Port, Rack Mount	Motorola	9	2610-24
10	Router, Ethernet/T1 Interface, multi-protocol; AES; 4 port	Motorola	10	ST6000
11	TVSS, 120 VAC, Rack-Mount eight-circuit	Motorola	11	OP820S
12	Misc. site hardware, cables	Various	12	Various - Various
13	Conventional Site Controller	Motorola	13	GCP8000
14	Ethernet TVSS, eight-wire, rack mounted	Motorola	14	DSTSJ100BT
15	Misc. Spare Equipment (per site)	Various	15	N/A
16	Dispatch Logging Application License, AES (per site)	Motorola	16	B1905 MCC 7500 ASTRO 25 SOFTWARE
17	Console logger interface for AES voice encryption, rack-mount	Motorola	17	DDN9650 MCC7500
18	Not Used		18	
19	Not Used		19	
20	Logging recorder, Digital IP, 30 calls, rack mount (no playback station)	Motorola	20	TT1092
21	Logging recorder interface to Master Site (for trunked radio traffic)	Motorola	21	AIS
22	Digital IP Logging Recorder, 120 channel (max), rack mount; incl. remote replay application and playback station (Qty. 1)	Nice	22	Previous Proposals - Options
23	Playback Workstation, CPU, 19" LCD non-touch monitor, windows, playback application, mouse, keyboard	Motorola	23	DDN9589
24	KVM switch, eight-port, PS2/USB/VGA	Motorola	24	DSF1DA108Z
66	\$0		66	
67	\$0		67	
68	\$0		68	

Sheet 5 - King County P25 Radio System Microwave Radio Interconnect Cost Estimate

King County P25 Phase 2 Radio System Cost Estimate

Interconnect System Cost Estimate

Microwave System Cost Estimate Summary

Site/Microwave Hop Type	Configuration	Frequency Band	Per Hop Microwave Radio Cost	Per Hop Antenna System Cost	Number of Hops	Extended Cost
Transportation Corridor Spur	MHSB - Non-Diversity	Lower 6 GHz	\$149,644	\$13,369.10	8	\$1,304,104.76
Transportation Corridor Spur	MHSB - Space Diversity	Lower 6 GHz	\$156,120	\$26,738.19	4	\$731,432.76
Urban Area Simulcast Site	Loop Protected Non-Diversity	11 GHz	\$96,448	\$10,230.01	40	\$4,267,120.36
Urban Area Simulcast Site	Loop Protected Space Diversity	11 GHz	\$148,496	\$20,460.02	4	\$675,824.07
Dispatch Center	Loop Protected Non-Diversity	11 GHz	\$96,448	\$10,230.01	18	\$1,920,204.16
				Microwave Radio System Equipment Cost		\$8,898,686.11
				Microwave Radio System Installation Cost		\$240,264.53
				Microwave Radio System Total Cost		\$9,138,950.64

King County P25 Phase 2 Radio System Cost Estimate

**King County P25 Phase 2 Radio System
Interconnect System Cost Estimate
Microwave Radio Equipment Costs**

Microwave Radio Equipment Costs	
6 GHz	
NS (1+0) 6 GHz Configuration (per hop)	\$89,220
MHSB (1+1) 6 GHz Configuration (per hop)	\$149,644
NSSD (1+0) 6 GHz Configuration (per hop)	\$156,120
HSSD (1+1) 6 GHz Configuration (per hop)	\$156,120
11 GHz	
NS (1+0) 11 GHz Configuration (per hop)	\$96,448
MHSB (1+1) 11 GHz Configuration (per hop)	\$144,684
NSSD (1+0) 11 GHz Configuration	\$148,496
HSSD (1+1) 11 GHz Configuration	\$148,496
Redundant Alarm and Control System (per hop)	\$100,000

NS = Non Standby - loop protection

MHSB - Monitored Hot Standby for spurs

NSSD - Non Standby, Space Diversity

HSSD - Hot Standby, Space Diversity

All radios assume Ethernet operation only, MPLS (Alcatel 9500 MPR)

King County P25 Phase 2 Radio System Cost Estimate

**King County P25 Phase 2 Radio System
Interconnect System Cost Estimate
Microwave Radio Antenna System Costs**

Description	Part Number	Cost Each	Quantity	Extended Cost
6ft HP ant single pol 5.725-6.425 GHz CPR137G with Radome	HP6-57W-P1A	\$3,010.00	2	\$ 6,020.00
Elliptical Waveguide 5.925 - 6.425 GHz Std.	EW52	\$ 10.00	300	\$ 3,000.00
Non-Tunable Conn for EW52 CPR137G Flange	252DE	\$ 267.00	4	\$ 1,068.00
Hanger Kit for EW52, Kit of 10 each	42396A-8	\$ 22.00	8	\$ 176.00
Waveguide Boot, 4" for EW52	WGB4-52	\$ 43.00	2	\$ 86.00
Grounding Kit w/ one hole lug for EW63	204989-4	\$ 18.00	6	\$ 108.00
Hoisting Grip for EW63	24312A	\$ 26.00	4	\$ 104.00
36" Flex-Twist, CPR137G Flanges 5.85-8.2 GHz	F137CCS3	\$ 337.00	2	\$ 674.00
Pressure Window, CPR137G	55001-137	\$ 51.00	2	\$ 102.00
Hardware Kit, 3/8" x 1" bolts, lock washers & nuts	31769-1	\$ 4.59	4	\$ 18.36
Angle Adapter Kit, Stainless steel	31768A	\$ 26.69	6	\$ 160.14
Threaded Rod Support Kit, Stainless steel 12" Long	31771-4	\$ 27.20	4	\$ 108.80
Subtotal				\$ 11,625.30
Markup for price increase (15%)				\$ 1,743.80
Total				\$ 13,369.10

6ft HP ant single pol 5.925-7.125 GHz CPR137G with Radome	HP6-59W-P1A	\$3,052.00	2	\$ 6,104.00
Elliptical Waveguide 6.425 - 7.125 GHz Std.	EW63	\$ 8.00	150	\$ 1,200.00
Non-Tunable Conn for EW63 CPR137G Flange	163DE	\$ 175.00	4	\$ 700.00
Hanger Kit for EW63, Kit of 10 each	42396A-7	\$ 22.00	8	\$ 176.00
Grounding Kit w/ one hole lug for EW63	204989-4	\$ 18.00	6	\$ 108.00
Hoisting Grip for EW63	24312A	\$ 26.00	4	\$ 104.00
Waveguide Boot, 4" for EW63	WGB4-63	\$ 43.00	4	\$ 172.00
36" Flex-Twist, CPR137G Flanges Low VSWR. 6.425-7.125 GHz	F137CCB3	\$ 406.00	2	\$ 812.00
Pressure Window, CPR137G	55001-137	\$ 51.00	2	\$ 102.00
Hardware Kit, 3/8" x 1" bolts, lock washers & nuts	31769-1	\$ 4.59	8	\$ 36.72
Angle Adapter Kit, Stainless steel	31768A	\$ 26.69	6	\$ 160.14
Threaded Rod Support Kit, Stainless steel 12" Long	31771-4	\$ 27.20	4	\$ 108.80
Subtotal				\$ 9,783.66
Markup for price increase (15%)				\$ 1,467.55
Total				\$ 11,251.21

6ft low profile ant single pol 10.0-10.7 GHz CPR90G	VHLP6-10W-6GR	\$2,569.00	2	\$ 5,138.00
Elliptical Waveguide 10.20 - 11.70 GHz Std.	EW90	\$ 8.00	200	\$ 1,600.00
Non-Tunable Conn for EW90 CPR90G Flange	190DE	\$ 190.00	4	\$ 760.00
Waveguide Boot, 4" for EW90	WGB4-90	\$ 43.00	2	\$ 86.00
Hanger Kit for EW90, Kit of 10 each	42396A-5	\$ 18.00	8	\$ 144.00
Grounding Kit w/ one hole lug for EW132	204989-2	\$ 18.00	6	\$ 108.00
Hoisting Grip for EW132	29958	\$ 20.00	2	\$ 40.00
36" Flex-Twist, CPR90G Flanges 8.2-12.4 GHz	F090CCS3	\$ 306.00	2	\$ 612.00
Pressure Window, CPR90G	55001-90	\$ 51.00	2	\$ 102.00
Hardware Kit, 3/8" x 1" bolts, lock washers & nuts	31769-1	\$ 4.59	8	\$ 36.72
Angle Adapter Kit, Stainless steel	31768A	\$ 26.69	6	\$ 160.14
Threaded Rod Support Kit, Stainless steel 12" Long	31771-4	\$ 27.20	4	\$ 108.80
Subtotal				\$ 8,895.66
Markup for price increase (15%)				\$ 1,334.35
Total				\$ 10,230.01

Antenna costs are per hop (2 antenna systems)

**Sheet 6 - King County P25 Radio System Subscriber Equipment Cost
Estimate**

King County P25 Phase 2 Radio System Cost Estimate

Cost Estimate Summary Page - Subscriber Units
1/13/2012

Item	Description	Estimated Price	Port Quantity	Seattle Quantity	King County Gov't Quantity	Valley Com Quantity	EPSCA Quantity	Total Quantity	Estimated Cost
Subscriber Equipment: Mobile	Non Public Safety Mobiles (APX6500 - No Encryption or OTAR)	\$4,954	400	618	600	500	569	2687	\$13,311,398
Subscriber Equipment: Mobile	Non Public Safety install/program	\$500	400	618	600	500	569	2687	\$1,343,500
Subscriber Equipment: Mobile	Public Safety Mobile (APX6500)	\$5,928	300		1911	793	674	3678	\$21,803,184
Subscriber Equipment: Mobile	Public Safety Mobile (APX7500RM)	\$7,130		930	1911			2841	\$20,256,330
Subscriber Equipment: Mobile	Public Safety install/program	\$1,000	300	930		793	674	2697	\$2,697,000
Subscriber Equipment: Mobile	TriBand Mobile (APX7500/800, UHF, VHF)	\$7,932			300			300	\$2,379,600
Subscriber Equipment: Portable	Non Public Safety Portables (APX6000 Type 3 - No Encryption or OTAR)	\$4,810	780	642	500	200	339	2461	\$11,837,410
Subscriber Equipment: Portable	Non Public Safety Portables [Waterproof] (APX6000 Type 3 - No Encryption or OTAR)	\$4,810		246				246	\$1,183,260
Subscriber Equipment: Portable	Non Public Safety program	\$75	780	888	500	200	339	2707	\$203,025
Subscriber Equipment: Portable	Public Safety Portable (APX6000 Type 3)	\$5,784	500		3640	2171	1159	7470	\$43,206,480
Subscriber Equipment: Portable	Public Safety Portable (APX7000)	\$7,373		941				941	\$6,937,993
Subscriber Equipment: Portable	Public Safety program	\$75	500	941	3640	2171	1159	8411	\$630,825
Subscriber Equipment: Portable	TriBand Portable (APX7000 700/800, UHF, VHF)	\$8,015			300			300	\$2,404,500
Subscriber Equipment: Console	Fixed Control Station (APX7500 - 700/800 MHz -with antenna system)	\$8,453	20	189			154	363	\$3,068,439
Subscriber Equipment: Console	Control Station/Console Program/Install	\$500	20	189			154	363	\$181,500
Subscriber Equipment Sub-Total									\$126,388,594
Subscriber Equipment Installation Sub-Total									\$5,055,850
Subscriber Equipment Total									\$131,444,444

King County P25 Phase 2 Radio System Cost Estimate

APX 7500 PUBLIC SAFETY MOBILE RADIO - 800 MHz & VHF WITH ENCRYPTION, OTAR, & OTAP

APX7500 DUAL BAND MID POWER	\$1,818.00
700/800MHZ BAND	\$0.00
VHF BAND	\$321.00
UHF BAND	\$321.00
ENABLE DUAL BAND OPERATION (VHF)	\$481.00
ENABLE DUAL BAND OPERATION (UHF)	\$481.00
APX O5 CONTROL HEAD	\$346.00
CONTROL HEAD SOFTWARE	\$0.00
REMOTE MOUNT MID POWER	\$238.00
ASTRO DIGITAL CAI OPERATION	\$413.00
SMARTZONE OPERATION APX	\$1,201.00
P25 TRUNKING SOFTWARE	\$241.00
ANT 3DB GAIN 762-870MHZ	\$31.00
VHF ANT WIDEBAND 136-174 MHZ	\$61.00
AES ENCRYPTION APX	\$381.00
TDMA OPERATION	\$321.00
OVER THE AIR PROVISIONING	\$81.00
GPS ANTENNA	\$61.00
GPS ACTIVATION	\$81.00
ENCRYPTION P25 & MDC OTAR	\$593.00
RS232 PACKET DATA INTERFACE	\$161.00
ADVANCED SYSTEM KEY - SOFTWARE KEY	\$0.00
PALM MIC	\$58.00
AUXILARY SPEAKER (7.5 WATT)	\$49.00
2 YR REPAIR SERVICE PLAN	\$193.00
APX 7500 PUBLIC SAFETY MOBILE RADIO - TOTAL	\$7,932.00

King County P25 Phase 2 Radio System Cost Estimate

APX 7500 PUBLIC SAFETY MOBILE RADIO - 800 MHz & VHF WITH ENCRYPTION, OTAR, & OTAP

APX7500 DUAL BAND MID POWER	\$1,818.00
700/800MHZ BAND	\$0.00
VHF BAND	\$321.00
ENABLE DUAL BAND OPERATION	\$481.00
APX O5 CONTROL HEAD	\$346.00
CONTROL HEAD SOFTWARE	\$0.00
REMOTE MOUNT MID POWER	\$238.00
ASTRO DIGITAL CAI OPERATION	\$413.00
SMARTZONE OPERATION APX	\$1,201.00
P25 TRUNKING SOFTWARE	\$241.00
ANT 3DB GAIN 762-870MHZ	\$31.00
VHF ANT WIDEBAND 136-174 MHZ	\$61.00
AES ENCRYPTION APX	\$381.00
TDMA OPERATION	\$321.00
OVER THE AIR PROVISIONING	\$81.00
GPS ANTENNA	\$61.00
GPS ACTIVATION	\$81.00
ENCRYPTION P25 & MDC OTAR	\$593.00
RS232 PACKET DATA INTERFACE	\$161.00
ADVANCED SYSTEM KEY - SOFTWARE KEY	\$0.00
PALM MIC	\$58.00
AUXILARY SPEAKER (7.5 WATT)	\$49.00
2 YR REPAIR SERVICE PLAN	\$193.00
APX 7500 PUBLIC SAFETY MOBILE RADIO - TOTAL	\$7,130.00

King County P25 Phase 2 Radio System Cost Estimate

APX 7500 PUBLIC SAFETY MOBILE RADIO - 800 MHz WITH ENCRYPTION, OTAR & OTAP

APX7500 DUAL BAND MID POWER	\$1,818.00
700/800MHZ BAND	\$0.00
VHF BAND	
ENABLE DUAL BAND OPERATION	
APX O5 CONTROL HEAD	\$346.00
CONTROL HEAD SOFTWARE	\$0.00
REMOTE MOUNT MID POWER	\$238.00
ASTRO DIGITAL CAI OPERATION	\$413.00
SMARTZONE OPERATION APX	\$1,201.00
P25 TRUNKING SOFTWARE	\$241.00
ANT 3DB GAIN 762-870MHZ	\$31.00
VHF ANT WIDEBAND 136-174 MHZ	\$61.00
AES ENCRYPTION APX	\$381.00
TDMA OPERATION	\$321.00
OVER THE AIR PROVISIONING	\$81.00
GPS ANTENNA	\$61.00
GPS ACTIVATION	\$81.00
ENCRYPTION P25 & MDC OTAR	\$593.00
RS232 PACKET DATA INTERFACE	\$161.00
ADVANCED SYSTEM KEY - SOFTWARE KEY	\$0.00
PALM MIC	\$58.00
AUXILARY SPEAKER (7.5 WATT)	\$49.00
2 YR REPAIR SERVICE PLAN	\$193.00
APX 7500 PUBLIC SAFETY MOBILE RADIO - TOTAL	\$6,328.00

King County P25 Phase 2 Radio System Cost Estimate

APX 6500 PUBLIC SAFETY MOBILE RADIO - 800 MHz WITH ENCRYPTION, OTAR, & OTAP

APX6500 7/800 MHZ MID POWER MOBILE	\$1,520.00
ASTRO DIGITAL CAI OP APX	\$413.00
SMARTZONE OPERATION APX	\$1,201.00
P25 TRUNKING SOFTWARE	\$241.00
APX O5 CONTROL HEAD	\$346.00
CONTROL HEAD SOFTWARE	\$0.00
REMOTE MOUNT MID POWER	\$238.00
ANT 3DB LOW-PROFILE 762-870	\$35.00
PALM MIC	\$58.00
AUXILARY SPKR 7.5 WATT	\$49.00
2 YEAR REPAIR SERVICE ADVANTAGE	\$148.00
AES ENCRYPTION APX	\$381.00
TDMA OPERATION	\$321.00
OVER THE AIR PROVISIONING	\$81.00
GPS ACTIVATION	\$81.00
GPS ANTENNA	\$61.00
ENCRYPTION P25 & MDC OTAR	\$593.00
RS232 PACKET DATA INTERFACE	\$161.00
ADVANCED SYSTEM KEY - SOFTWARE KEY	\$0.00
APX 6500 PUBLIC SAFETY MOBILE RADIO - TOTAL	\$5,928.00

King County P25 Phase 2 Radio System Cost Estimate

APX 6500 PUBLIC SAFETY MOBILE RADIO - 800 MHz NON-PUBLIC SAFETY - NO ENCRYPTON, NO OTAR

APX6500 7/800 MHZ MID POWER MOBILE	\$1,520.00
ASTRO DIGITAL CAI OP APX	\$413.00
SMARTZONE OPERATION APX	\$1,201.00
P25 TRUNKING SOFTWARE	\$241.00
APX O5 CONTROL HEAD	\$346.00
CONTROL HEAD SOFTWARE	\$0.00
REMOTE MOUNT MID POWER	\$238.00
ANTENNA - 3 DB LOW-PROFILE 762-870	\$35.00
PALM MIC	\$58.00
AUXILARY SPKR 7.5 WATT	\$49.00
2 YEAR REPAIR SERVICE ADVANTAGE	\$148.00
AES ENCRYPTION APX	
TDMA OPERATION	\$321.00
OVER THE AIR PROVISIONING	\$81.00
GPS ACTIVATION	\$81.00
GPS ANTENNA	\$61.00
ENCRYPTION P25 & MDC OTAR	
RS232 PACKET DATA INTERFACE	\$161.00
ADVANCED SYSTEM KEY - SOFTWARE KEY	\$0.00
APX 6500 PUBLIC SAFETY MOBILE RADIO - TOTAL	\$4,954.00

King County P25 Phase 2 Radio System Cost Estimate

APX 7000 PUBLIC SAFETY PORTABLE RADIO - 800 MHz & VHF WITH ENCRYPTION, OTAR, AND OTAP

APX7000 DIGITAL PORTABLE RADIO	\$2,106.00
700/800MHZ BAND	\$0.00
VHF BAND	\$321.00
UHF BAND	\$321.00
LARGE COLOR DISPLAY AND FULL KEYPAD	\$401.00
ENABLE TRI BAND OPERATION	\$801.00
ASTRO DIGITAL CAI OPERATION	\$413.00
SMARTZONE OPERATION	\$1,201.00
TDMA OPERATION	\$321.00
P25 9600 BAUD TRUNKING	\$241.00
AES ENCRYPTION	\$381.00
ADVANCED SYSTEM KEY	\$0.00
PROGRAMMING OVER P25	\$81.00
RADIO PACKET DATA (IV&D)	\$161.00
ENABLE INTERNAL GPS OPERATION	\$81.00
ASTRO P25 OTAR W/ MULTIKEY	\$593.00
SINGLE UNIT CHARGER	\$101.00
REMOTE SPEAKER MIC. NOISE CANC. EMERGENCY BUTTON	\$86.00
LIION 2900MAH SUBMERSIBLE BATTERY	\$113.00
LIION 2900MAH SUBMERSIBLE BATTERY (SPARE)	\$113.00
LEATHER CARRY CASE WITH 3" FIXED BELT LOOP	\$54.00
2 YR REPAIR SERVICE PLAN	\$125.00
APX 7000 PUBLIC SAFETY PORTABLE RADIO - TOTAL	\$8,015.00

King County P25 Phase 2 Radio System Cost Estimate

APX 7000 PUBLIC SAFETY PORTABLE RADIO - 800 MHz & VHF WITH ENCRYPTION, OTAR, AND OTAP

APX7000 DIGITAL PORTABLE RADIO	\$2,106.00
700/800MHZ BAND	\$0.00
VHF BAND	\$0.00
LARGE COLOR DISPLAY AND FULL KEYPAD	\$401.00
ENABLE DUAL BAND OPERATION	\$801.00
ASTRO DIGITAL CAI OPERATION	\$413.00
SMARTZONE OPERATION	\$1,201.00
TDMA OPERATION	\$321.00
P25 9600 BAUD TRUNKING	\$241.00
AES ENCRYPTION	\$381.00
ADVANCED SYSTEM KEY	\$0.00
PROGRAMMING OVER P25	\$81.00
RADIO PACKET DATA (IV&D)	\$161.00
ENABLE INTERNAL GPS OPERATION	\$81.00
ASTRO P25 OTAR W/ MULTIKEY	\$593.00
SINGLE UNIT CHARGER	\$101.00
REMOTE SPEAKER MIC. NOISE CANC. EMERGENCY BUTTON	\$86.00
LIION 2900MAH SUBMERSIBLE BATTERY	\$113.00
LIION 2900MAH SUBMERSIBLE BATTERY (SPARE)	\$113.00
LEATHER CARRY CASE WITH 3" FIXED BELT LOOP	\$54.00
2 YR REPAIR SERVICE PLAN	\$125.00
APX 7000 PUBLIC SAFETY PORTABLE RADIO - TOTAL	\$7,373.00

King County P25 Phase 2 Radio System Cost Estimate

APX 7000 PUBLIC SAFETY PORTABLE RADIO - 800 MHz WITH ENCRYPTION, OTAR, AND OTAP

APX7000 DIGITAL PORTABLE RADIO	\$2,106.00
700/800MHZ BAND	\$0.00
VHF BAND	\$0.00
LARGE COLOR DISPLAY AND FULL KEYPAD	\$401.00
ENABLE DUAL BAND OPERATION	
ASTRO DIGITAL CAI OPERATION	\$413.00
SMARTZONE OPERATION	\$1,201.00
TDMA OPERATION	\$321.00
P25 9600 BAUD TRUNKING	\$241.00
AES ENCRYPTION	\$381.00
ADVANCED SYSTEM KEY	\$0.00
PROGRAMMING OVER P25	\$81.00
RADIO PACKET DATA (IV&D)	\$161.00
ENABLE INTERNAL GPS OPERATION	\$81.00
ASTRO P25 OTAR W/ MULTIKEY	\$593.00
SINGLE UNIT CHARGER	\$101.00
REMOTE SPEAKER MIC. NOISE CANC. EMERGENCY BUTTON	\$86.00
LIION 2900MAH SUBMERSIBLE BATTERY	\$113.00
LIION 2900MAH SUBMERSIBLE BATTERY (SPARE)	\$113.00
LEATHER CARRY CASE WITH 3" FIXED BELT LOOP	\$54.00
2 YR REPAIR SERVICE PLAN	\$125.00
APX 7000 PUBLIC SAFETY PORTABLE RADIO - TOTAL	\$6,572.00

King County P25 Phase 2 Radio System Cost Estimate

**APX 6000 PUBLIC SAFETY PORTABLE RADIO
WITH ENCRYPTION, OTAR, AND OTAP**

APX6000 700/800 MODEL PORTABLE	\$2,081.00
SMARTZONE OPERATION	\$961.00
ASTRO DIGITAL CAI OPERATION	\$413.00
P25 9600 BAUD TRUNKING	\$241.00
AES ENCRYPTION	\$381.00
NIMH 2100MAH IP67 BATTERY	\$63.00
NIMH 2100MAH IP67 BATTERY (SPARE)	\$63.00
PROGRAMMING OVER P25 (OTAP)	\$81.00
RADIO PACKET DATA	\$161.00
ENABLE INTERNAL ACTIVATION AND GPS BASIC FUNCTIONALITY	\$81.00
MDC & ASTRO P25 OTAR W/ MULTIKEY	\$593.00
TDMA OPERATION	\$321.00
ADVANCED SYSTEM KEY - SOFTWARE KEY	\$0.00
SINGLE UNIT CHARGER US/NA/CA/LA	\$101.00
RSM, NOISE CANC. EMERGENCY BUTTON 3.5MM JACK IP54	\$86.00
LEATHER CARRY CASE WITH 3" FIXED BELT LOOP	\$54.00
2 YEAR REPAIR SERVICE PLAN	\$103.00
APX 6000 PUBLIC SAFETY PORTABLE RADIO - TOTAL	\$5,784.00

King County P25 Phase 2 Radio System Cost Estimate

**APX 6000 PUBLIC SAFETY PORTABLE RADIO
WITH ENCRYPTION, OTAR, AND OTAP**

APX6000 700/800 MODEL PORTABLE	\$2,081.00
SMARTZONE OPERATION	\$961.00
ASTRO DIGITAL CAI OPERATION	\$413.00
P25 9600 BAUD TRUNKING	\$241.00
AES ENCRYPTION	\$0.00
NIMH 2100MAH IP67 BATTERY	\$63.00
NIMH 2100MAH IP67 BATTERY (SPARE)	\$63.00
PROGRAMMING OVER P25 (OTAP)	\$81.00
RADIO PACKET DATA	\$161.00
ENABLE INTERNAL ACTIVATION AND GPS BASIC FUNCTIONALITY	\$81.00
MDC & ASTRO P25 OTAR W/ MULTIKEY	\$0.00
TDMA OPERATION	\$321.00
ADVANCED SYSTEM KEY - SOFTWARE KEY	\$0.00
SINGLE UNIT CHARGER US/NA/CA/LA	\$101.00
RSM, NOISE CANC. EMERGENCY BUTTON 3.5MM JACK IP54	\$86.00
LEATHER CARRY CASE WITH 3" FIXED BELT LOOP	\$54.00
2 YEAR REPAIR SERVICE PLAN	\$103.00
APX 6000 PUBLIC SAFETY PORTABLE RADIO - TOTAL	\$4,810.00

King County P25 Phase 2 Radio System Cost Estimate

**APX 6000 PUBLIC SAFETY PORTABLE RADIO
WITHOUT ENCRYPTION, OTAR, AND OTAP**

APX6000 700/800 MODEL PORTABLE	\$2,081.00
SMARTZONE OPERATION	\$961.00
ASTRO DIGITAL CAI OPERATION	\$413.00
P25 9600 BAUD TRUNKING	\$241.00
AES ENCRYPTION	\$0.00
NIMH 2100MAH IP67 BATTERY	\$63.00
NIMH 2100MAH IP67 BATTERY (SPARE)	\$63.00
PROGRAMMING OVER P25 (OTAP)	\$81.00
RADIO PACKET DATA	\$161.00
ENABLE INTERNAL ACTIVATION AND GPS BASIC FUNCTIONALITY	\$81.00
MDC & ASTRO P25 OTAR W/ MULTIKEY	\$0.00
TDMA OPERATION	\$321.00
ADVANCED SYSTEM KEY - SOFTWARE KEY	\$0.00
SINGLE UNIT CHARGER US/NA/CA/LA	\$101.00
RSM, NOISE CANC. EMERGENCY BUTTON 3.5MM JACK IP54	\$86.00
LEATHER CARRY CASE WITH 3" FIXED BELT LOOP	\$54.00
2 YEAR REPAIR SERVICE PLAN	\$103.00
APX 6000 PUBLIC SAFETY PORTABLE RADIO - TOTAL	\$4,810.00

King County P25 Phase 2 Radio System Cost Estimate

APX 4000 PORTABLE RADIO - NON PUBLIC SAFETY NO ENCRYPTION; WITH OTAP & GPS

APX 4000 PORTABLE RADIO	\$1,681.00
TRUNKING 3600 BAUD OR SOFTWARE TRUNKING 9600 BAUD	\$1,257.00
AES ENCRYPTION	\$381.00
NIMH 2100MAH IP67 BATTERY	\$63.00
NIMH 2100MAH IP67 BATTERY (SPARE)	\$63.00
OVER THE AIR PROVISIONING	\$81.00
RADIO PACKET DATA	\$161.00
ENABLE INTERNAL ACTIVATION AND GPS BASIC FUNCTIONALITY	\$81.00
TDMA OPERATION	\$321.00
ADVANCED SYSTEM KEY - SOFTWARE KEY	\$0.00
SINGLE UNIT CHARGER	\$101.00
RSM, NOISE CANC. EMERGENCY BUTTON 3.5MM JACK IP54	\$86.00
LEATHER CARRY CASE WITH 3" FIXED BELT LOOP	\$54.00
2 YEAR REPAIR SERVICE PLAN	\$103.00
APX 4000 PORTABLE RADIO - TOTAL	\$4,433.00

Sheet 7 - King County Radio System Lease & FTE Cost NPV Calculations

King County P25 Phase 2 Radio System Cost Estimate

King County Radio System Cost Estimate
Lease Cost NPV Calculation

1/5/2012

New Tower and New Shelter

Net Present Value of Lease Payments Over 7 Years (84 Payments)	(\$173,356.58)
Annual Interest Rate	3.00%
Annual Inflation Rate	3.00%
Initial Monthly Lease Payment	\$2,100
Lease Payment 1	-\$2,100
Lease Payment 2	-\$2,100
Lease Payment 3	-\$2,100
Lease Payment 4	-\$2,100
Lease Payment 5	-\$2,100
Lease Payment 6	-\$2,100
Lease Payment 7	-\$2,100
Lease Payment 8	-\$2,100
Lease Payment 9	-\$2,100
Lease Payment 10	-\$2,100
Lease Payment 11	-\$2,100
Lease Payment 12	-\$2,100
Lease Payment 13	-\$2,163
Lease Payment 14	-\$2,163
Lease Payment 15	-\$2,163
Lease Payment 16	-\$2,163
Lease Payment 17	-\$2,163
Lease Payment 18	-\$2,163
Lease Payment 19	-\$2,163
Lease Payment 20	-\$2,163
Lease Payment 21	-\$2,163
Lease Payment 22	-\$2,163
Lease Payment 23	-\$2,163
Lease Payment 24	-\$2,163
Lease Payment 25	-\$2,228
Lease Payment 26	-\$2,228
Lease Payment 27	-\$2,228
Lease Payment 28	-\$2,228
Lease Payment 29	-\$2,228
Lease Payment 30	-\$2,228
Lease Payment 31	-\$2,228
Lease Payment 32	-\$2,228
Lease Payment 33	-\$2,228
Lease Payment 34	-\$2,228
Lease Payment 35	-\$2,228
Lease Payment 36	-\$2,228
Lease Payment 37	-\$2,295
Lease Payment 38	-\$2,295
Lease Payment 39	-\$2,295
Lease Payment 40	-\$2,295
Lease Payment 41	-\$2,295
Lease Payment 42	-\$2,295
Lease Payment 43	-\$2,295
Lease Payment 44	-\$2,295
Lease Payment 45	-\$2,295
Lease Payment 46	-\$2,295
Lease Payment 47	-\$2,295
Lease Payment 48	-\$2,295
Lease Payment 49	-\$2,364
Lease Payment 50	-\$2,364
Lease Payment 51	-\$2,364
Lease Payment 52	-\$2,364
Lease Payment 53	-\$2,364
Lease Payment 54	-\$2,364
Lease Payment 55	-\$2,364
Lease Payment 56	-\$2,364
Lease Payment 57	-\$2,364
Lease Payment 58	-\$2,364
Lease Payment 59	-\$2,364
Lease Payment 60	-\$2,364
Lease Payment 61	-\$2,434
Lease Payment 62	-\$2,434
Lease Payment 63	-\$2,434
Lease Payment 64	-\$2,434
Lease Payment 65	-\$2,434
Lease Payment 66	-\$2,434
Lease Payment 67	-\$2,434
Lease Payment 68	-\$2,434
Lease Payment 69	-\$2,434
Lease Payment 70	-\$2,434
Lease Payment 71	-\$2,434
Lease Payment 72	-\$2,434
Lease Payment 73	-\$2,508
Lease Payment 74	-\$2,508
Lease Payment 75	-\$2,508
Lease Payment 76	-\$2,508
Lease Payment 77	-\$2,508
Lease Payment 78	-\$2,508
Lease Payment 79	-\$2,508
Lease Payment 80	-\$2,508
Lease Payment 81	-\$2,508
Lease Payment 82	-\$2,508
Lease Payment 83	-\$2,508
Lease Payment 84	-\$2,508
Sum of Lease Payments	-\$133,790

King County P25 Phase 2 Radio System Cost Estimate

Lease Cost Net Present Value Calculation

New Tower Only

1/13/2012

Net Present Value of Lease Payments Over 7 Years (84 Payments)	(\$86,678.29)
Annual Interest Rate	3.00%
Annual Inflation Rate	3.00%
Initial Monthly Lease Payment	\$1,050
Lease Payment 1	-\$1,050
Lease Payment 2	-\$1,050
Lease Payment 3	-\$1,050
Lease Payment 4	-\$1,050
Lease Payment 5	-\$1,050
Lease Payment 6	-\$1,050
Lease Payment 7	-\$1,050
Lease Payment 8	-\$1,050
Lease Payment 9	-\$1,050
Lease Payment 10	-\$1,050
Lease Payment 11	-\$1,050
Lease Payment 12	-\$1,050
Lease Payment 13	-\$1,082
Lease Payment 14	-\$1,082
Lease Payment 15	-\$1,082
Lease Payment 16	-\$1,082
Lease Payment 17	-\$1,082
Lease Payment 18	-\$1,082
Lease Payment 19	-\$1,082
Lease Payment 20	-\$1,082
Lease Payment 21	-\$1,082
Lease Payment 22	-\$1,082
Lease Payment 23	-\$1,082
Lease Payment 24	-\$1,082
Lease Payment 25	-\$1,114
Lease Payment 26	-\$1,114
Lease Payment 27	-\$1,114
Lease Payment 28	-\$1,114
Lease Payment 29	-\$1,114
Lease Payment 30	-\$1,114
Lease Payment 31	-\$1,114
Lease Payment 32	-\$1,114
Lease Payment 33	-\$1,114
Lease Payment 34	-\$1,114
Lease Payment 35	-\$1,114
Lease Payment 36	-\$1,114
Lease Payment 37	-\$1,147
Lease Payment 38	-\$1,147
Lease Payment 39	-\$1,147
Lease Payment 40	-\$1,147
Lease Payment 41	-\$1,147
Lease Payment 42	-\$1,147
Lease Payment 43	-\$1,147
Lease Payment 44	-\$1,147
Lease Payment 45	-\$1,147
Lease Payment 46	-\$1,147
Lease Payment 47	-\$1,147
Lease Payment 48	-\$1,147
Lease Payment 49	-\$1,182
Lease Payment 50	-\$1,182
Lease Payment 51	-\$1,182
Lease Payment 52	-\$1,182
Lease Payment 53	-\$1,182
Lease Payment 54	-\$1,182
Lease Payment 55	-\$1,182
Lease Payment 56	-\$1,182
Lease Payment 57	-\$1,182
Lease Payment 58	-\$1,182
Lease Payment 59	-\$1,182
Lease Payment 60	-\$1,182
Lease Payment 61	-\$1,217
Lease Payment 62	-\$1,217
Lease Payment 63	-\$1,217
Lease Payment 64	-\$1,217
Lease Payment 65	-\$1,217
Lease Payment 66	-\$1,217
Lease Payment 67	-\$1,217
Lease Payment 68	-\$1,217
Lease Payment 69	-\$1,217
Lease Payment 70	-\$1,217
Lease Payment 71	-\$1,217
Lease Payment 72	-\$1,217
Lease Payment 73	-\$1,254
Lease Payment 74	-\$1,254
Lease Payment 75	-\$1,254
Lease Payment 76	-\$1,254
Lease Payment 77	-\$1,254
Lease Payment 78	-\$1,254
Lease Payment 79	-\$1,254
Lease Payment 80	-\$1,254
Lease Payment 81	-\$1,254
Lease Payment 82	-\$1,254
Lease Payment 83	-\$1,254
Lease Payment 84	-\$1,254
Sum of Lease Payments	-\$66,895

King County P25 Phase 2 Radio System Cost Estimate

FTE Cost Net Present Value Calculation

Project Manager

1/13/2012

Net Present Value of PM Monthly Salary over 7 Years (84 Payments)	(\$780,432.28)
Annual Interest Rate	3.00%
Annual Inflation Rate	2.60%
Initial Annual Salary	\$ 160,000.00
Initial Monthly Salary Payment	\$13,333
Monthly Salary Payment 1	-\$13,333
Monthly Salary Payment 2	-\$13,333
Monthly Salary Payment 3	-\$13,333
Monthly Salary Payment 4	-\$13,333
Monthly Salary Payment 5	-\$13,333
Monthly Salary Payment 6	-\$13,333
Monthly Salary Payment 7	-\$13,333
Monthly Salary Payment 8	-\$13,333
Monthly Salary Payment 9	-\$13,333
Monthly Salary Payment 10	-\$13,333
Monthly Salary Payment 11	-\$13,333
Monthly Salary Payment 12	-\$13,333
Monthly Salary Payment 13	-\$13,680
Monthly Salary Payment 14	-\$13,680
Monthly Salary Payment 15	-\$13,680
Monthly Salary Payment 16	-\$13,680
Monthly Salary Payment 17	-\$13,680
Monthly Salary Payment 18	-\$13,680
Monthly Salary Payment 19	-\$13,680
Monthly Salary Payment 20	-\$13,680
Monthly Salary Payment 21	-\$13,680
Monthly Salary Payment 22	-\$13,680
Monthly Salary Payment 23	-\$13,680
Monthly Salary Payment 24	-\$13,680
Monthly Salary Payment 25	-\$14,036
Monthly Salary Payment 26	-\$14,036
Monthly Salary Payment 27	-\$14,036
Monthly Salary Payment 28	-\$14,036
Monthly Salary Payment 29	-\$14,036
Monthly Salary Payment 30	-\$14,036
Monthly Salary Payment 31	-\$14,036
Monthly Salary Payment 32	-\$14,036
Monthly Salary Payment 33	-\$14,036
Monthly Salary Payment 34	-\$14,036
Monthly Salary Payment 35	-\$14,036
Monthly Salary Payment 36	-\$14,036
Monthly Salary Payment 37	-\$14,401
Monthly Salary Payment 38	-\$14,401
Monthly Salary Payment 39	-\$14,401
Monthly Salary Payment 40	-\$14,401
Monthly Salary Payment 41	-\$14,401
Monthly Salary Payment 42	-\$14,401
Monthly Salary Payment 43	-\$14,401
Monthly Salary Payment 44	-\$14,401
Monthly Salary Payment 45	-\$14,401
Monthly Salary Payment 46	-\$14,401
Monthly Salary Payment 47	-\$14,401
Monthly Salary Payment 48	-\$14,401
Monthly Salary Payment 49	-\$14,775
Monthly Salary Payment 50	-\$14,775
Monthly Salary Payment 51	-\$14,775
Monthly Salary Payment 52	-\$14,775
Monthly Salary Payment 53	-\$14,775
Monthly Salary Payment 54	-\$14,775
Monthly Salary Payment 55	-\$14,775
Monthly Salary Payment 56	-\$14,775
Monthly Salary Payment 57	-\$14,775
Monthly Salary Payment 58	-\$14,775
Monthly Salary Payment 59	-\$14,775
Monthly Salary Payment 60	-\$14,775
Monthly Salary Payment 61	-\$15,159
Monthly Salary Payment 62	-\$15,159
Monthly Salary Payment 63	-\$15,159
Monthly Salary Payment 64	-\$15,159
Monthly Salary Payment 65	-\$15,159
Monthly Salary Payment 66	-\$15,159
Monthly Salary Payment 67	-\$15,159
Monthly Salary Payment 68	-\$15,159
Monthly Salary Payment 69	-\$15,159
Monthly Salary Payment 70	-\$15,159
Monthly Salary Payment 71	-\$15,159
Monthly Salary Payment 72	-\$15,159
Monthly Salary Payment 73	-\$15,553
Monthly Salary Payment 74	-\$15,553
Monthly Salary Payment 75	-\$15,553
Monthly Salary Payment 76	-\$15,553
Monthly Salary Payment 77	-\$15,553
Monthly Salary Payment 78	-\$15,553
Monthly Salary Payment 79	-\$15,553
Monthly Salary Payment 80	-\$15,553
Monthly Salary Payment 81	-\$15,553
Monthly Salary Payment 82	-\$15,553
Monthly Salary Payment 83	-\$15,553
Monthly Salary Payment 84	-\$15,553
Sum of Salary Payments	-\$842,696

Sheet 8 - King County P25 Radio System Cost Estimate – Assumptions

King County P25 Phase 2 Radio System Cost Estimate

King County P25 Phase 2 Radio System Cost Estimate Cost Estimate Assumptions

ASSUMPTIONS BY CATEGORY	
System Coverage Requirements and Site Assumptions	
1	97% Service Area Reliability coverage in the bounded area of King county [The bounded area includes the entire geography of each county west of the Cascade Mountain foothill boundary, all cities, and all major roadways. The foothill boundary is defined here as the first topographic contour that exceeds 750 feet of elevation as you travel eastward from Puget Sound.]
2	97% Service Area Reliability coverage in each city (all cities are be included within the identified bounded areas)
3	97% Service Area Reliability coverage in the bounded area defined by the transportation corridors consisting of the portions of I-90, SR 2 and SR 410 that are within King County and outside of the "urban" bounded area defined above.
4	Belt-level portable radio coverage (talk-in and talk-out) with a half-wave dipole antenna on the portable radio--the assumed loss relative to a half-wave dipole in free space for this configuration is -14.3 dB
5	System will include a VHF/UHF subsystem (2 channels VHF and 2 Channels UHF) with coverage of the urbanized and transportation corridors with the same level of Service Area Reliability defined above.
6	56 Sites - 28 Existing Sites; 28 New Sites (See "King County P25 Phase 2 Radio System - Cost Estimate Introduction and Narrative" document for a description of the analysis used to determine number of sites required.)
7	7-Year Buildout for Existing and New Sites (Entire New System)
Radio Site Equipment Assumptions	
8	The cost estimate assumes at total of 56 repeater sites, 2 P25 master sites (dual-redundant and geographically separate), and 9 simulcast prime sites.
9	Prime sites are assumed to be configured with the "high availability" option, which provides a higher number of available channels in the event of a switch failure at the prime site than the standard configuration.
10	Urbanized area simulcast sites are assumed to have 28 800 MHz base stations (24 base stations repeaters for voice channel use, and 4 base stations used for redundant control channels).
11	Transportation corridor simulcast repeater sites with 800 MHz channels only are assumed to have 8 800 MHz base stations (6 base station repeaters for voice operation and 2 base stations used for redundant control channels).
12	Transportation corridor simulcast repeater sites with 800 MHz, VHF and UHF channels are assumed to have 8 800 MHz base stations (6 base station repeaters for voice operation and 2 base stations used for redundant control channels), 2 VHF base station repeaters and 2 UHF base station repeaters.
13	10 Sites (out of 56 total) will have both 800 Mhz and VHF/UHF radios.
14	All Existing IR sites in urbanized portion of County incorporated into simulcast systems whenever possible
15	3 800 MHz TX antennas and 2 800 MHz RX antennas at urbanized area (28 channel) 800 MHz simulcast sites
16	2 800 Mhz TX antennas and 2 800 MHz RX antennas at transportation corridor 800 MHz sites
17	1 VHF TX antennas and 1 VHF RX antennas, 1 UHF TX antenna and 1 UHF RX antenna at sites with VHF and UHF base stations in addition to 800 MHz base stations and antennas
18	11.5 dBd gain omnidirectional antennas for 800 MHz sub-systems
19	6.0 dBd gain omnidirectional antennas for VHF sub-systems
20	6.0 dBd gain omnidirectional antennas for UHF sub-systems
21	1-5/8" transmission line for 800 MHz antennas
22	7/8" transmission line for VHF & UHF antennas
23	Dispatch System Assumptions
24	Number of dispatch centers and dispatch positions based on existing dispatch facilities in King County 800 MHz Radio System
25	Control stations used for both dispatch position backup and for off-the-air voice recording (both functions performed by single control stations on a talkgroup-by-talkgroup basis)
Interconnect System Assumptions	
26	Microwave Radio Interconnect between sites (worst case)
27	Two Radios per Site (Repeater Sites + Dispatch Centers)
28	Multiple Protected Loops in Urban Coverage Area
29	Monitored Hot Standby Spurs in Transportation Corridors
30	Antenna Costs are per hop (2 antenna systems)
31	Urban Area Simulcast Sites are on protected loops
32	Transportation corridor sites are on MHSB (Monitored Hot Standby) Spurs
33	4 hops of loop-protected space diversity
34	4 hops of MHSB loop protected space diversity
Equipment Shelter and Tower Assumptions	
35	10' X 25' Equipment Shelters assumed for all sites with new shelters
36	Equipment Shelter Cost includes all AC power equipment, including integrated main panel, 42 breaker sub-panel, input surge arrestors, and transfer switch
37	Equipment Shelter Cost includes HVAC
38	Fire Protection System assumed for all new shelters
39	180' Self Supporting Towers assumed for all sites with new towers
40	All new towers comply with EIA-222-G Standard
Site Development Assumptions	
41	See "Appendix A - King County P25 Radio System - Site Development & Land Use Cost Assumptions" Document
42	Site topography is such that retaining walls and other site stabilization measures are not required
43	Sites have power and telco, microwave, or fiber available.
44	Dual prime generator scenario is not included
Consultant Cost Assumptions	
45	See "Appendix A - King County P25 Radio System - Site Development & Land Use Cost Assumptions" Document

**Appendix A - King County P25 Radio System - Site Development & Land Use
Cost Assumptions**

APPENDIX A - KING COUNTY P25 RADIO SYSTEM – SITE DEVELOPMENT/LAND USE COST ESTIMATE ASSUMPTIONS

12.30.11

Leasing:

25 hrs – New site which includes obtaining owner contact info, prep correspondence, TC s, coordination with County legal staff, expenses for copies, scans, etc. Does not include legal fees – assumption is that the County will do the preparation of lease documents, and review of those documents

Scenario # 1:

Assumes collocating (adding) antennas which will trigger need for the following:

1. No land use approval needed,
2. BP (contractor to include electrical permit in contract), \$ 6,350 = 62.5 hrs + \$ 100 for expenses and an additional \$ 200 for Application fee
3. FCC Form 621 (adding antenna), \$ 7,100 = 70 hrs + \$ 100 for expenses
4. NEPA Checklist (\$ 2,700 = 26.5 hrs + \$ 50 for expenses)
5. Construction/Admin - \$ 2,000 – 20 hrs for construction support (no site visits)

Scenario # 2:

Assumes site modifications (adding new generator and fuel tank in addition to collocating new antennas on the existing tower) which will trigger need for the following:

1. Pre Application for LU approval, \$ 2,230 – 22 hrs + \$ 150 expenses + \$ 1,500 application fee
2. Likely – Land Use approval (amendment to original LU approval) \$ 7,150 = 69.5 hrs + \$ 100 expenses
3. Survey \$ 2,00 - \$ 3,500 + \$ 1,000 (10 hrs) for prep of scope and coordination by MAA
4. Geotech \$ 5,500 + \$ 1,000 (10 hrs) for prep of scope, coordination and site visit by MAA
6. Electrical Engineering Subconsultant \$ 3,500 + \$ 2,000 bidding & constr support + \$ 500 (10 hrs) for dwg review & coordination time by MAA
7. Mechanical Engineering Subconsultant \$ 2,000 + \$ 500 (5 hrs) for dwg review & coordination time by MAA
8. BP (contractor to include electrical permit in contract), \$ 6,350 = 62.5 hrs + \$ 100 for expenses) + \$ 800 Application fee
9. FCC Form 621 (adding antenna), \$ 7,100 = 70 hrs + \$ 100 expenses
10. NEPA Checklist (\$ 2,750 = 26.5 hrs + \$ 50 expenses)
11. Construction/Admin - \$ 2,000 – 20 hrs for construction support (no site visits)

Scenario # 3:

Low site - Assumes new site development (new tower, antennas, shelter, generator and fuel tank, fence, landscaping) which will trigger need for the following:

1. FAA/TOWAIR review (determination of no hazard),

King County P25 Phase 2 Radio System Cost Estimate

2. Survey \$ 2,500 - \$ 3,500 + \$ 1,000 (10 hrs) for prep of scope and coordination by MAA
3. Pre Application for LU approval, \$ 2,200 – 22 hrs + \$ 1,500 application fee
4. Land use approval (new approval), \$ 7,150 = 69.5 hrs + \$ 100 expenses
5. Geotech \$ 5,500 + \$ 1,000 (10 hrs) for prep of scope, coordination and site visit by MAA
6. Electrical Engineering Subconsultant \$ 3,500 + \$ 2,000 bidding & constr support + \$ 500 (10 hrs) for dwg review & coordination time by MAA
7. Mechanical Engineering Subconsultant \$ 2,000 + \$ 500 (5 hrs) for dwg review & coordination time by MAA
8. BP (contractor to include electrical permit in contract), \$ 6,350 = 62.5 hrs + \$ 100 for expenses + \$ 1,800 for Application fee
12. FCC Form 620 (new tower, etc), \$ 7,100 = 70 hrs + \$ 100 for expenses
13. NEPA Checklist (\$ 2,750 = 26.5 hrs + \$ 50 for expenses)
14. Construction/Admin - \$ 2,000 – 20 hrs for construction support (no site visits)

Scenario # 4:

High site - Assumes all new site development (new tower, antennas, shelter, generator and fuel tank, fence) which will trigger need for the following:

1. FAA/TOWAIR review (determination of no hazard),
2. Survey \$ 2,500 - \$ 3,000 + \$ 1,000 (10 hrs) for prep of scope and coordination by MAA
3. Pre Application for LU approval, \$ 2,200 – 22 hrs + \$ 1,500 application fee
4. Land use approval (new approval), \$ 7,150 = 69.5 hrs + \$ 100 expenses
5. Electrical Engineering subconsultant \$ 3,500 + \$ 2,000 bidding & constr support + \$ 500 (10 hrs) for dwg review & coordination time by MAA
6. Mechanical Engineering subconsultant \$ 2,000 + \$ 500 (5 hrs) for dwg review & coordination time by MAA
7. Geotech \$ 6,500 - \$ 7,000 + \$ 1,000 (10 hrs) for prep of scope, coordination and site visit by MAA
8. BP (contractor to include electrical permit in contract), \$ 6,350 = 62.5 hrs + \$ 100 for expenses + \$ 1,800 for Application fee
9. FCC Form 620 (new tower, etc), \$ 7,100 = 70 hrs + \$ 100 for expenses
10. NEPA Checklist (\$ 2,700 = 26.5 hrs + \$ 50 for expenses)
11. Construction/Admin - \$ 2,000 – 20 hrs for construction support (no site visits)

Scenario # 5:

Assumes some site modifications (new shelter) in addition to collocating of antennas on existing tower which will trigger need for the following:

1. Pre Application for LU approval, \$ 2,200 – 22 hrs + \$ 1,500 application fee
2. Likely - Land use approval for new shelter (amendment to original LU approval), \$ 7,150 = 69.5 hrs + \$ 100 expenses
3. Survey \$ 2,500 - \$ 3,000 + \$ 1,000 (10 hrs) for prep of scope and coordination by MAA
4. Geotech (if previous unavailable) \$ 5,500 + \$ 1,000 (10 hrs) for prep of scope, coordination and site visit by MAA

King County P25 Phase 2 Radio System Cost Estimate

5. Electrical Engineering Subconsultant \$ 3,500 - \$ 2,000 bidding & constr support + \$ 500 (10 hrs) for dwg review & coordination time by MAA
6. BP (contractor to include electrical permit in contract), \$ 6,350 = 62.5 hrs + \$ 100 for expenses + \$ 800 for Application fee
7. FCC Form 621 (antenna), \$ 7,100 = 70 hrs + \$ 100 for expenses
8. NEPA Checklist (\$ 2,700 = 26.5 hrs + \$ 50 for expenses)
9. Construction/Admin - \$ 2,000 – 20 hrs for construction support (no site visits)

Scenario # 6:

Assumes site modifications (new tower, demolishing the existing tower) in addition to collocating (adding) of antennas to new tower which will trigger need for the following:

1. FAA/TOWAIR review (determination of no hazard),
2. Survey \$ 2,500 - \$ 3,500 + \$ 1,000 (10 hrs) for prep of scope and coordination by MAA
3. Pre Application for LU approval, \$ 2,200 – 22 hrs + \$ 1,500 application fee
4. Land use approval (amendment to original LU approval), \$ 7,150 = 69.5 hrs + \$ 100 expenses
5. Geotech (if previous one unavailable) \$ 5,500 + \$ 1,000 (10 hrs) for prep of scope, coordination and site visit by MAA
6. BP (contractor to include electrical permit in contract), \$ 6,350 = 62.5 hrs + \$ 100 for expenses + \$ 1,200 for Application fee
7. Demo permit, \$ 1,000 – 10 hrs, + \$ 250 for Application fee
8. FCC Form 621 (antenna), \$ 7,100 = 70 hrs + \$ 100 for expenses
9. NEPA Checklist (\$ 2,700 = 26.5 hrs + \$ 50 for expenses)
10. Construction/Admin - \$ 2,000 – 20 hrs for construction support (no site visits)

Geotech:

Estimated \$ 5,500 for lowland sites; \$ 6,500 - \$ 7,500 for high sites

Survey:

Estimated \$ 2,500 - \$ 3,000 for lowland sites; \$ 2,500 - \$ 3,500 for high sites

Electrical Engineering Subconsultant:

Estimated \$ 3,500 + \$ 2,000 for bidding & construction support services

Mechanical Engineering Consultant:

Estimated \$ 2,000

Assumptions:

- FAA/TOWAIR – I did not plug any numbers for this task. NOTE: TOWAIR would take 1.5 hrs; FAA tasks - filing FAA Form 7460-1 would add another 8 hrs and filing FAA Form 7460-2 would add another 3 hrs
- Pre-Application Task – assumes application prep time for Application, prep of narrative and simple graphics and attendance at pre-application mtg, and prep of notes regarding mtg feedback/results

King County P25 Phase 2 Radio System Cost Estimate

- Survey – based on recent cost figures
- Geotech – based on recent cost figures
- Land Use Application/Approval – include prep time for application, coordination with NWTE, assembling documents, attendance at public hearing, and tracking of approval process
- BP – includes application prep time, coordination time with NWTE, assembling of docs & dwgs, submittal
- FCC Form 620/621 – includes obtaining data from agencies, prep of letter to Tribes; prep of Form and obtaining SHPO clearance from Department of Archaeology & Historic Preservation (DAHP)
- NEPA Checklist – includes obtain data from agencies to conduct review; prep of letter + expenses
- Construction/Admin – support includes clarifying issues with permitting agency, coordinating special inspections if required, following up with permitting jurisdictions for closeout, obtaining copies of final inspections, etc

hp/michael bus/kg co – h and d.dsk: narrative for cost estimate – 12.30.11

King County P25 Phase 2 Radio System Cost Estimate

Dispatch Centers and Workstations

IP-type dispatch workstation equipment was assumed, with supporting network equipment. Workstations consist of a positional CPU, 19" non-touch screen LCD display, audio and signaling interface, gooseneck microphone and push-to-talk interfaces. Both select and unselect speakers are provided at each position. Each position was assigned a radio control station and desktop remote control for backup use. Additional control stations were provided for use in the equipment room for greater channel capacity in support of the voice logging equipment. Workstation CPUs were distributed among two managed Ethernet switches and associated routers for connection to the Master Site.

Should the Master site connection be lost, workstations would still have connectivity to the network through backup control stations. Control of local conventional resources would be provided through one or more four-channel conventional site controllers at each center.

Specifically, each center will be equipped with the following:

- Conventional channel interface for legacy and interop channel operation and patching; larger centers equipped with two for added channel capacity
- Conventional site controller (allows for independent console operating with conventional systems should master site link fail)
- Auxiliary alarm input and output devices (for door alarms, controls, etc.)
- One backup radio control station per dispatch workstation position, plus 20% for additional channels; these will also supply audio for local voice logging recorders.
- Control station combiners and associated antennas; larger centers also equipped with a receiver multicoupler for control station receivers.
- Redundant Ethernet switches and routers (split among the workstations)
- Transient voltage surge suppression
- Misc. spare equipment per site
- 30 or 120 channel digital logging recorders, playback stations and AES encryption interface

Dispatch center and workstation assumptions:

- Reuse of existing generator and site UPS backup power systems
- One-year warranty assumed for all hardware, software and services
- No significant facility rehabilitation
- Reuse of existing dispatch furniture, lighting and chairs
- Reuse of existing CAD, E9-1-1 and administrative telephone equipment
- Each site connected to Master Site through leased T1, fiber and/or microwave radio (costs shown elsewhere in report)

END