

**Polk County BOCC**

# **Dynamic System Resilience - Services**

USFL24P190M

February 10th, 2025

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**Subject: Dynamic System Resilience (DSR)**

Dear KB,

Motorola Solutions, Inc. ("Motorola") is pleased to have the opportunity to provide the Polk County BOCC with quality communications equipment and services. The Motorola project team has taken great care to propose a solution that will meet your needs and provide unsurpassed value.

To best meet the specifications of this solicitation, our solution includes the requested implementation services. Specifically, this solution is for the provision of backup capability in case of system failure, adding a geographically separate fully redundant core, as follows:

- DSR keeps both zone core(primary and backup) sites configured and synced for rapid cutover
- DSR backup core located with full redundancy at Auburndale remote radio site
- Fully redundant cores provide network management features and core component
- Includes a second IMW server for deployment in the DSR's CEN. Together with the existing IMW at the primary zone core, the resulting two IMW's will be configured to act as a geo-redundant pair to provide redundant data
- Provides Polk County with maximum reliability of Astro Core Land Mobile Radio System

The services described in this proposal shall be delivered under the terms and conditions of the Master Purchase Agreement #15-009, signed between Motorola and Polk County on February 3<sup>rd</sup>, 2015. This proposal shall remain valid until April 25<sup>th</sup> 2025. Alternatively, Motorola would be pleased to address any concerns Customer may have regarding the proposal. Any questions can be directed to your Motorola Account Executives, Walter Garcia at 305.968.0605, or Bob Busch at 615.477.8245.

We thank you for the opportunity to furnish Polk County with "best in class" solutions and we hope to strengthen our relationship by implementing this project. Our goal is to provide you with the best products and services available in the communications industry.

Sincerely,

Motorola Solutions, Inc.



Danny Sanchez  
Territory Vice President

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## Section 1

# System Description

Providing continued communications is an essential goal of the ASTRO 25 platform. Motorola Solutions has tailored its proposed design for Polk County to optimize the system's resiliency, functionality, and budget for Polk County's specific environment.

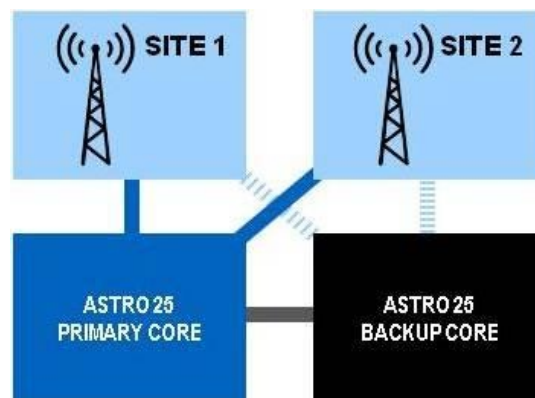
This proposal is for Dynamic System Resilience (DSR), which deploys a second zone core site as a fully redundant backup, including network management features and core component redundancy (see the figure titled "Single Zone System with Dynamic System Resilience"). We propose that the DSR core be located at the Auburndale site.

## Dynamic System Resilience

DSR keeps both zone core site configurations synced for rapid switchover. If the primary zone core site fails, the system automatically switches to the backup zone core site with minimal interruption to radio users. DSR also provides redundant data components, which switch independently of voice components. Most DSR-enabled systems return to wide-area trunking operation in fewer than 30 seconds, ensuring that the system remains active and maintaining communications at the most critical times of need.

Dynamic System Resilience provides:

- Real-time synchronization—Without operator intervention, core configuration data syncs for rapid core switch-over.
- Fast switchover—Most systems return to wide-area trunking operation in less than 30 seconds.
- Geographic Redundancy—Having cores in two locations provides the highest level of system outage protection to deliver constant communications.
- Failure testing—Manual core switching enables periodic testing of failure protection and both cores.



**Figure 1-1: Single Zone System with Dynamic System Resilience – Fully redundant cores provide network management features and core component redundancy.**

In this proposal, Polk County's DSR would be configured with the following components:

- (2) DL380 Gen10 Core Servers
- (2) LAN Switches
- (2) Edge Routers
- (2) Backhaul Switches.
- (1) MSA 2060 Direct Attached Storage (DAS)
- (1) Packet Data Gateway (PDG)
- (1) Gateway GPRS Service Node (GGSN)
- (1) Border Router
- (1) DMZ/LAN Switch
- (1) CEN (Customer Enterprise Network) LAN Switch
- (1) High Tier Intelligent Middleware (IMW) server in the DSR CEN, configured to operate as a geo-redundant backup to the existing IMW in the primary CEN
- Upgrade of the existing IMW to support geo-redundant pairing with the new IMW
- (1) 48-port Terminal Server
- (1) Inter-System Gateway (ISGW)
- (1) RNI/DMZ Firewall
- (1) ISSI 8000 Firewall
- (1) Internetworking Firewall
- (1) VPN Remote Access Firewall for Motorola System Support Center (SSC) access to the DSR
- (1) Upgraded VPN Remote Access Firewall for the primary core to match the firewall deployed at the DSR
- (1) NM Client with Z2 Mini PC and 19" non-touch-screen monitor
- (5) PMC cards and (8) SFP module expansion of the existing SAR-8 MPLS Router to accommodate the introduction of the DSR.
- (2) Zone Controller software licenses to support locally-redundant Zone Controller operation within the DSR location
- (1) UNC software license
- (1) Provisioning Manager software license
- (1) UEM (with Email Alarm Notifications) software license
- (1) Event Logging (Syslog) software license
- (1) Backup and Recovery (BAR) software license
- Windows Supplemental and Anti-Malware licenses for windows PCs and servers within the core
- UNC Device Licenses for managed objects at the Core.

A DSR backup core requires a TRAK timing source. We propose that the DSR will share the existing TRAK unit at the Auburndale site at which it will be collocated. No dedicated TRAK unit has been included for the DSR core in this proposal.

# Polk County Primary Core Functionality vs. DSR

While the primary function of a DSR core is to keep the ASTRO radio system and consoles operational in the event of loss of the primary Core, MSI has taken into account other applications that rely on connectivity to an active Core in our DSR design. Shown below in *Table 1-1* is the functionality that can currently be found at the Bartow core vs. the functionality that MSI has accounted for at the DSR core in this proposal:

Function	Primary Core	DSR	Notes
Intelligent Middleware (IMW)	Yes	Yes	<ul style="list-style-type: none"> <li>A secondary IMW is included.</li> <li>There is a floating IP address that is shared between the IMW instances (Active/Passive). The CAD system points to that floating IP address for location data.</li> <li>Location and Presence licenses that currently exist on the primary IMW will be shared with the redundant IMW at the DSR core.</li> </ul>
SmartConnect	Yes	Yes	<ul style="list-style-type: none"> <li>A redundant internetworking firewall is included to keep the LTE/WiFi capabilities available to all agencies when using subscribers that are capable of that functionality.</li> <li>Two of the four existing LMR Multicast Proxys (LMP) will be repurposed to the DSR core to provide SmartConnect Redundancy.</li> <li>Polk County will have to provide an ISP connection of at least 25 Mbps to the new internetworking firewall at the DSR site.</li> </ul>
Customer Enterprise Network (CEN)	Yes	Yes	<ul style="list-style-type: none"> <li>MSI has proposed a high availability IMW using a shared CEN between the two DSR zones.</li> </ul>
Remote Access and Head End Firewall	Yes	Yes	<ul style="list-style-type: none"> <li>MSI has included a second Remote Access/Head End Firewall.</li> </ul>
Network Management Client (NM)	Yes	Yes	<ul style="list-style-type: none"> <li>MSI has included a secondary NM client at the new DSR location.</li> </ul>
Cloud Anchor Server	Yes	N/A	<ul style="list-style-type: none"> <li>The Cloud anchor server at the Bartow site is not currently used by Polk County.</li> <li>MSI does not support redundant cloud anchor servers.</li> </ul>
Genesis	Yes	No	<ul style="list-style-type: none"> <li>Per Polk County's direction, MSI has not included Genesis functionality for the DSR zone core.</li> </ul>
NICE Logging Recorder	Yes	Yes	<ul style="list-style-type: none"> <li>The redundant NICE Logger, and its corresponding AIS, will be relocated from Bartow to the Auburndale site.</li> <li>Polk County currently only has a single NICE Inform application which is hosted on the primary NICE Logger that will remain at Bartow. In the event of failure of the entire Bartow site, audio recording will still be captured via the redundant logger that has been relocated to Auburndale. However, Inform applications will be lost until such time as the Inform application is restored at Bartow.</li> </ul>

**Table 1-1: Primary Core vs. DSR Core Functionality**

## Intelligent Middleware (IMW) Resilience

While CEN-resident applications are not necessarily duplicated at a DSR site, our proposal does include a second IMW server for deployment in the DSR's CEN. Together with the existing IMW at the primary zone core, the resulting two IMW's will be configured to act as a geo-redundant pair. A load-sharing protocol allows both IMW's to be accessed using the same IP address that is used today by the existing IMW (with only the currently-active IMW responding to IP packets); this means that no code plug or programmed IP address changes will be required in the subscribers or in the CAD system to reach the geo-redundant IMW's. We do recommend that the third party CAD system be given a network connection to the DSR CEN in case network connectivity via the primary core is lost during an outage scenario.

## IP Logging Resilience

We propose to relocate one of the two existing, parallel NICE IP Loggers and its Logging Backup Server (LBS) – along with one Motorola Archiving Interface Server (AIS) – from the Bartow site to the Auburndale site. This will create a greater resilience for the IP logging system that better aligns with the proposed zone core architecture.

To facilitate placement of the AIS and NICE servers at Auburndale, this proposal will also create a collocated ASTRO Network Management/Dispatch (NMD) "site" at Auburndale comprising one Site Router, one LAN Switch, and one Control Station Firewall. The NMD site will not actually be used as a dispatch site (although it could be used for such purpose in the future if consoles were to be added); its proposed purpose is simply to create a logical network site to host the relocated NICE Logging equipment. This partial relocation of the existing logging system will ensure that logging capture is also protected from a complete outage of the Bartow facility.

It should be noted that the NICE Inform application (used to retrieve and replay recordings from the loggers and to reconstruct incidents) runs as a cohabitated application on the NICE LBS that will remain at Bartow. The NICE Inform application is not redundant/resilient today, nor will it become redundant or geo-redundant under this proposal. Should an outage occur on the NICE Inform server, Inform capabilities will be lost until restoration of that server, but audio capture should continue to occur at the Auburndale location for later retrieval once Inform is restored. Communications between NICE Inform and the relocated NICE Logger will require Control Room Firewall access to the County's IT network at Auburndale. This traffic can alternatively be carried over the MPLS and microwave network to Bartow and presented to the County IT network at Bartow, if this IT network is not readily accessible at the Auburndale location.

## Microwave Backhaul Network Resilience

The introduction of a DSR node into the ASTRO system has the potential to generate additional traffic on portions of the Polk County microwave backhaul architecture. In certain path failure scenarios, this may expose the paths listed below in *Table 1-2*, that are currently only capable of carrying 45 Mbps, to higher amounts of ASTRO traffic (potentially approaching 80 Mbps). Accordingly, this proposal contains software licensing upgrades to increase the maximum capacity of the five (5) listed microwave hops from 45 Mbps to 134 Mbps (64-QAM, per FCC licensing requirements). All of these paths are located on the eastern side of the county.

These microwave links will be equipped for Adaptive Coding and Modulation (ACM) operation, which steps down the modulation and link capacity during severe link fades such as caused by heavy

rainstorms. On 3 of the paths, 99.999% or better availability is met at the newly proposed maximum throughput of 134 Mbps (i.e. full 64-QAM operation). On the other two paths (Dundee – Loughman, and Loughman – Fire Station 112), 99.999% or better availability is met at 32-QAM, which corresponds to a path throughput of 105 Mbps. Please refer to *Table 1-3* on page 7, and *Table 1-4* on page 8 for greater detail on the predictive path availability for these two links at 32-QAM. Motorola proposes that the MPLS Routers will be programmed to rate-limit the traffic presented to all 5 paths to 105 Mbps, to ensure all paths will provide 99.999% or better availability. This addresses the needs for additional capacity while avoiding the need for hardware and dish relocation at the microwave nodes as well as any consequential need for tower structural upgrades.



PATH	SITE NAME	MAIN ANTENNA MODEL	MAIN ANTENNA DIAMETER (ft)	MAIN ANTENNA HEIGHT (ft)	MAIN TX LINE MODEL	MAIN TX LINE LENGTH (ft)	DIVERSITY ANTENNA MODEL	DIVERSITY ANTENNA DIAMETER (ft)	DIVERSITY ANTENNA HEIGHT (ft)	DIVERSITY TX LINE MODEL	DIVERSITY TX LINE LENGTH (ft)	FADE MARGIN (db)	RADIO MODEL	MODULATION / THROUGHPUT	RFU TYPE	RADIO CONFIGURATION	PATH LENGTH (mi)	ANNUAL TWO-WAY AVAILABILITY (%)
1	Dundee	PAR8-65	8	120	EU 63	170						44.06	Proteus MX/I/6G/30M/HP	64 QAM / 134 Mbps	Indoor	Non Protected	15.46	99.99885
	Loughman	PAR8-65	8	155	EU 63	205												
2	Frostproof	UA 8 - 65 A	8	155	EU 63	205						47.91	Proteus MX/I/6G/30M/HP	64 QAM / 134 Mbps	Indoor	Non Protected	14.93	99.99927
	Indian Lakes	UA 8 - 65 A	8	155	EU 63	205												
3	Loughman	VHLP6-6W	6	190	EU 63	240						42.36	Proteus MX/I/6G/30M/HP	64 QAM / 134 Mbps	Indoor	Non Protected	12.57	99.99882
	FS 112	VHLP6-6W	6	175	EU 63	250												
4	Polk City	PAR8-65	8	150	EU 63	200						44.93	Proteus MX/I/6G/30M/HP	64 QAM / 134 Mbps	Indoor	Non Protected	13.4	99.99913
	FS 112	PAR8-65	8	155	EU 63	205												
5	Indian Lakes	UA 8 - 65 A	8	240	EU 63	290	HP6-65	6	210	EU 63	260	42.86	Proteus MX/I/6G/30M/HP	64 QAM / 134 Mbps	Indoor	NP Space Diversity	22.61	99.99997
	Dundee	UA 8 - 65 A	8	170	EU 63	220	HP6-65	6	140	EU 63	190							

**Table 1-2: Details of Proposed Microwave Path Upgrades**

	TX power (dBm)		RX threshold level (dBm)		EIRP (dBm)		Receive signal (dBm)		Thermal fade margin (dB)		Flat fade margin - multipath (dB)	
64 QAM 134 Mbps	32.00	32.00	-73.50	-73.50	69.72	69.25	-29.44	-29.44	44.06	44.06	44.06	44.06
<b>32 QAM 105 Mbps</b>	<b>33.00</b>	<b>33.00</b>	<b>-76.50</b>	<b>-76.50</b>	<b>70.72</b>	<b>70.25</b>	<b>-28.44</b>	<b>-28.44</b>	<b>48.06</b>	<b>48.06</b>	<b>48.06</b>	<b>48.06</b>
16 QAM 90 Mbps	33.00	33.00	-79.00	-79.00	70.72	70.25	-28.44	-28.44	50.56	50.56	50.56	50.56
16 QAM 76 Mbps	33.00	33.00	-80.50	-80.50	70.72	70.25	-28.44	-28.44	52.06	52.06	52.06	52.06
8 QAM 64 Mbps	34.00	34.00	-81.00	-81.00	71.72	71.25	-27.44	-27.44	53.56	53.56	53.56	53.56
QPSK 45 Mbps	34.00	34.00	-86.00	-86.00	71.72	71.25	-27.44	-27.44	58.56	58.56	58.56	58.56
	Worst month multipath		Annual multipath		Annual rain		Total annual (2 way)		Time in mode (2 way)			
64 QAM 134 Mbps	99.9984	99.9984	99.9994	99.9994	99.9999	99.9999	99.9988		99.9988			
<b>32 QAM 105 Mbps</b>	<b>99.9994</b>	<b>99.9994</b>	<b>99.9998</b>	<b>99.9998</b>	<b>99.9999</b>	<b>99.9999</b>	<b>99.9996</b>		<b>0.0007</b>			
16 QAM 90 Mbps	99.9997	99.9997	99.9999	99.9999	99.9999	99.9999	99.9998		0.0002			
16 QAM 76 Mbps	99.9998	99.9998	99.9999	99.9999	99.9999	99.9999	99.9998		0.0001			
8 QAM 64 Mbps	99.9998	99.9998	99.9999	99.9999	99.9999	99.9999	99.9999		0.0000			
QPSK 45 Mbps	99.9999	99.9999	99.9999	99.9999	99.9999	99.9999	99.9999		0.0001			

**Table 1-3: Dundee to Loughman Predicted Availability at 32 QAM/105 Mbps**

	TX power (dBm)		RX threshold level (dBm)		EIRP (dBm)		Receive signal (dBm)		Thermal fade margin (dB)		Flat fade margin - multipath (dB)	
64 QAM 134 Mbps	32.00	32.00	-73.50	-73.50	67.78	67.65	-31.14	-31.14	42.36	42.36	42.36	42.36
<b>32 QAM 105 Mbps</b>	<b>33.00</b>	<b>33.00</b>	<b>-76.50</b>	<b>-76.50</b>	<b>68.78</b>	<b>68.65</b>	<b>-30.14</b>	<b>-30.14</b>	<b>46.36</b>	<b>46.36</b>	<b>46.36</b>	<b>46.36</b>
16 QAM 90 Mbps	33.00	33.00	-79.00	-79.00	68.78	68.65	-30.14	-30.14	48.86	48.86	48.86	48.86
16 QAM 76 Mbps	33.00	33.00	-80.50	-80.50	68.78	68.65	-30.14	-30.14	50.36	50.36	50.36	50.36
8 QAM 64 Mbps	34.00	34.00	-81.00	-81.00	69.78	69.65	-29.14	-29.14	51.86	51.86	51.86	51.86
QPSK 45 Mbps	34.00	34.00	-86.00	-86.00	69.78	69.65	-29.14	-29.14	56.86	56.86	56.86	56.86
	Worst month multipath		Annual multipath		Annual rain		Total annual (2 way)		Time in mode (2 way)			
64 QAM 134 Mbps	99.9983	99.9983	99.9994	99.9994	99.9999	99.9999			99.9988		99.9988	
<b>32 QAM 105 Mbps</b>	<b>99.9993</b>	<b>99.9993</b>	<b>99.9998</b>	<b>99.9998</b>	<b>99.9999</b>	<b>99.9999</b>			<b>99.9995</b>		0.0007	
16 QAM 90 Mbps	99.9997	99.9997	99.9999	99.9999	99.9999	99.9999			99.9998		0.0002	
16 QAM 76 Mbps	99.9998	99.9998	99.9999	99.9999	99.9999	99.9999			99.9998		0.0001	
8 QAM 64 Mbps	99.9998	99.9998	99.9999	99.9999	99.9999	99.9999			99.9999		0.0001	
QPSK 45 Mbps	99.9999	99.9999	99.9999	99.9999	99.9999	99.9999			99.9999		0.0001	

**Table 1-4: FS112 to Loughman Predictive Availability at 32 QAM/105 Mbps**

Section 2

# Statement of Work

Motorola is proposing to Polk County the installation and configuration of the following equipment at the specified locations.

Site Name	Major Equipment
Auburndale	<ul style="list-style-type: none"> <li>• (2) DL380 Gen10 Core Servers</li> <li>• (2) LAN Switches</li> <li>• (2) Edge Routers</li> <li>• (2) Backhaul Switches.</li> <li>• (1) MSA 2060 Direct Attached Storage (DAS)</li> <li>• (1) Packet Data Gateway (PDG)</li> <li>• (1) Gateway GPRS Service Node (GGSN)</li> <li>• (1) Border Router</li> <li>• (1) DMZ/LAN Switch</li> <li>• (1) CEN LAN Switch</li> <li>• (1) Intelligent Middleware (IMW) server</li> <li>• (1) 48-port Terminal Server</li> <li>• (1) Inter-System Gateway (ISGW)</li> <li>• (1) RNI/DMZ Firewall</li> <li>• (1) ISSI 8000 Firewall</li> <li>• (1) Internetworking Firewall</li> <li>• (1) Remote Access Firewall</li> <li>• (1) NM Client with Z2 Mini PC and 19" non-touch-screen monitor</li> <li>• (5) PMC card and (8) SFP module expansion of the existing SAR-8 MPLS Router to accommodate the introduction of the DSR.</li> <li>• Additional assorted software licenses</li> <li>• (1) NMD Site Router to support IP logging</li> <li>• (1) NMD LAN Switch to support IP logging</li> <li>• (1) NMD Control Room Firewall to support IP logging</li> <li>• (1) NMD Control Room CEN LAN to support IP logging</li> <li>• (1) Archiving Interface Server (AIS), already existing and will be relocated from Bartow</li> <li>• (1) NICE IP Radio Logger and (1) Logging Backup Server, both are already existing and will be relocated from Bartow</li> </ul>
Master Site	<ul style="list-style-type: none"> <li>• Associated Core enablement software licenses</li> <li>• (1) Upgraded Remote Access Firewall</li> <li>• Geo-redundant operation enablement of the existing IMW</li> </ul>
Dundee	<ul style="list-style-type: none"> <li>• (2) 134 Mb, 64 QAM, ACM Software Licenses</li> <li>• (2) MW TX Filters</li> <li>• (3) MW RX Filters</li> </ul>

Site Name	Major Equipment
Loughman	<ul style="list-style-type: none"> <li>(2) 134 MB, 64 QAM, ACM Software Licenses</li> <li>(2) MW TX Filters</li> <li>(2) MW RX Filters</li> </ul>
Frostproof	<ul style="list-style-type: none"> <li>(1) 134 MB, 64 QAM, ACM Software License</li> <li>(1) MW TX Filter</li> <li>(1) MW RX Filter</li> </ul>
Indian Lakes	<ul style="list-style-type: none"> <li>(2) 134 MB, 64 QAM, ACM Software Licenses</li> <li>(2) MW TX Filters</li> <li>(3) MW RX Filters</li> </ul>
FS112	<ul style="list-style-type: none"> <li>(2) 134 MB, 64 QAM, ACM Software Licenses</li> <li>(2) MW TX Filters</li> <li>(2) MW RX Filters</li> </ul>
Polk City	<ul style="list-style-type: none"> <li>(1) 134 MB, 64 QAM, ACM Software License</li> <li>(1) MW TX Filter</li> <li>(1) MW RX Filter</li> </ul>
Remote Site(s) (Network Hardening)	<ul style="list-style-type: none"> <li>PMC card(s) expansion and OS upgrades of the existing SAR MPLS Router(s) to accommodate the introduction of the DSR <i>*There are no known compatibility issues with the proposed PMC cards and the existing Polk SAR A devices</i></li> </ul>
Spares	<ul style="list-style-type: none"> <li>(1) 24 port switch for the CR CEN LAN Switch</li> <li>(1) 48 port switch for the DSR Core</li> </ul>

The document delineates the general responsibilities between Motorola and Polk County.

## 2.1 Motorola Responsibilities

Motorola’s general responsibilities include the following:

- Perform the installation of the Motorola-supplied equipment described above.
- Schedule the implementation in agreement with the County.
- Coordinate the activities of all Motorola subcontractors under this agreement.
- Administer safe work procedures for installation.
- Provide the County with the appropriate system interconnect specifications.

## 2.2 Polk County Responsibilities

The County will assume responsibility for the installation and performance of all other equipment and work necessary for completion of this project that is not provided by Motorola. General responsibilities for the County include the following:

- Provide all buildings, equipment shelters, and towers required for system installation.

- Ensure communications sites meet space, grounding, power, HVAC, and connectivity requirements for the installation of all equipment.
- Obtain all licensing, site access, or permitting required for project implementation.
- Provide required system interconnections, to include a network connection from the third party CAD system to the newly-created DSR CEN, and a 25 Mbps or faster internet connection to the DSR Internetworking Firewall.
- The County will provide a dedicated delivery point, such as a warehouse, for receipt, inventory, and storage of equipment prior to delivery to the site(s).
- Coordinate the activities of all County vendors or other contractors.
- Schedule with Motorola any planned down time required for any testing and reconfiguration activities (see next section).

## 2.3 Assumptions

Motorola has made several assumptions in preparing this proposal, which are noted below. In order to provide a firm quote, Motorola will need to verify all assumptions or seek alternate solutions in the case of invalid assumptions.

- All existing sites or equipment locations will have sufficient space available for the system described as required/specified by R56.
  - It is assumed that the shelter at the Auburndale RF site will have room for the DSR cabinet and the NMD site equipment needed to host the NICE redundant logger at that location.
- All existing sites or equipment locations will have adequate electrical power in the proper phase and voltage, site grounding, and HVAC to support the requirements of the system described.
  - If upgrades to the electrical and/or HVAC system for the shelter at the Auburndale RF site are found to be necessary in order to support the additional equipment then those upgrades will be the responsibility of the County.
- Any site/location upgrades or modifications are the responsibility of the County.
- Approved local, State, or Federal permits as may be required for the installation and operation of the proposed equipment are the responsibility of the County.
- Any required system interconnections not specifically outlined here will be provided by the County. These may include dedicated phone circuits, microwave links, or other types of connectivity.
- No coverage guarantee is included in this proposal.
- Motorola is not responsible for interference caused or received by the Motorola-provided equipment except for interference that is directly caused by the Motorola-provided transmitter(s) to the Motorola-provided receiver(s). Should Polk County's system experience interference, Motorola can be contracted to investigate the source and recommend solutions to mitigate the issue.
- CCSI staging includes Level 5 "Rack and Stack". No customer witnessed staging is included.
- With the exception of a geo-redundant IMW & redundant NICE Logger move, CEN products and services and back-up CEN connectivity are not part of this proposal.
- A backup network connection from the third party CAD system to the DSR CEN is recommended so that the CAD system can reach the geo-redundant IMW (without relying on IMW connectivity being maintained via the primary zone core's CEN in an outage scenario).

Creation of this network connectivity is a customer responsibility and is not part of Motorola's scope under this proposal.

- Reconfiguring the existing and proposed IMW's for geo-redundant operation requires about 1 hour of scheduled downtime to occur twice over two consecutive days. During this downtime, IMW GPS location services will be unavailable, but voice call processing on the ASTRO system will be unaffected.
- Deployment of a DSR backup core does not typically require any ASTRO system down time, other than testing of the actual switchover to verify intended operation. Any pre-acceptance testing or acceptance testing of the DSR will involve approximately 30 seconds of downtime until restoration of wide area trunking, during any tests involving a forced switchover to the DSR or back again to the primary zone core.
- Customer will procure and furnish a 25 Mbps or faster internet connection to the DSR site (comparable to the connection at the Bartow zone core). This connection will allow the DSR to support the APX NEXT SmartConnect service, or potentially other Motorola Azure cloud-supported services that may be accessed in the future.
- Assumes Ethernet connectivity for all site links. No T1 support is included in the proposed design.
- No spare parts are included in this proposal apart from one spare Juniper EX 4100-24P switch for the CR CEN LAN switch, and one Juniper EX4100-48P switch for the DSR Core site. It is assumed that the DSR site will share all other spare components from the County's existing spare pool for the Bartow Core.
- Assumes no additional API interface costs are required for the existing CAD system. Any additional costs would have to be quoted directly to the County by their existing CAD vendor.

### Section 3

# Acceptance Test Plan

System Acceptance of the proposed solution will occur upon successful completion of a Functional Acceptance Test Plan (FATP), which will test the features, functions, and failure modes for the installed equipment in order to verify that the solution operates according to its design. This plan will validate that Polk County's solution will operate according to its design, and increase the efficiency and accuracy of the final installation activities. A detailed FATP will be developed and finalized during project implementation.

## Section 4

# Service/Warranty

All equipment comes with Motorola's standard 12 month warranty. During this 12 month warranty period the new DSR site equipment will be covered under the same terms and conditions as Polk County's current service agreement which covers the rest of their equipment. Any additional years of coverage for the new equipment will be quoted separately as part of the County's next service contract.

MSI has quoted Nokia SAR upgrades which include 1 year of Nokia maintenance services for their existing SAR-A and SAR-8 model routers. This service plan includes Technical Support Gold, Return-for-Exchange, and a software plan (SSP/SRS) coverage.

Nokia maintenance services start at the time of shipment. If Polk County takes advantage of this one time OS upgrade included with this proposal, the current SAR equipment will be under maintenance for 1 year from the date of shipment.



Section 5

# Preliminary Project Schedule

Listed below is the preliminary project schedule.

<b>Polk County DSR - Preliminary Schedule</b>	<b>210 d</b>	<b>Thu 5/1/25</b>	<b>Tue 3/3/26</b>
<b>Project Initiation</b>	<b>21 d</b>	<b>Thu 5/1/25</b>	<b>Fri 5/30/25</b>
Award (Project Set Up)	15 d	Thu 5/1/25	Wed 5/21/25
Internal Project Plan/Design Review	5 d	Thu 5/22/25	Thu 5/29/25
Post Sale Transition Meeting Completed	1 d	Fri 5/30/25	Fri 5/30/25
<b>Project Planning</b>	<b>25 d</b>	<b>Fri 5/30/25</b>	<b>Thu 7/3/25</b>
Customer Design Review (CDR)	5 d	Fri 5/30/25	Thu 6/5/25
Change Order Process	10 d	Fri 6/6/25	Thu 6/19/25
Update Project Plans (Post CDR)	10 d	Fri 6/20/25	Thu 7/3/25
<b>Project Execution</b>	<b>170 d</b>	<b>Fri 6/6/25</b>	<b>Tue 2/10/26</b>
Make Order and SI Procurement (Subject to supply chain)	100 d	Fri 6/6/25	Mon 10/27/25
MW System Upgrade - Procurement & FCC Licensing	75 d	Fri 6/6/25	Mon 9/22/25
Upgrade of the MW System	15 d	Tue 9/23/25	Mon 10/13/25
DSR System Staging	30 d	Tue 10/28/25	Wed 12/10/25
Receive and Inventory DSR Equipment	5 d	Thu 12/11/25	Wed 12/17/25
Transition to Service Preparation	10 d	Thu 12/11/25	Fri 12/26/25
DSR System Installation	5 d	Thu 12/18/25	Fri 12/26/25
DSR System Optimization	15 d	Mon 12/29/25	Tue 1/20/26
System Readiness Review	5 d	Wed 1/21/26	Tue 1/27/26
DSR System Cutover	5 d	Wed 1/28/26	Tue 2/3/26
DSR System Acceptance Test	5 d	Wed 2/4/26	Tue 2/10/26
<b>Project Close</b>	<b>15 d</b>	<b>Wed 2/11/26</b>	<b>Tue 3/3/26</b>
Finalize System Documentation	10 d	Wed 2/11/26	Tue 2/24/26
Punchlist Resolution	10 d	Wed 2/11/26	Tue 2/24/26
Final Acceptance	0 d	Tue 2/24/26	Tue 2/24/26
Complete Service Transition Meeting	5 d	Wed 2/25/26	Tue 3/3/26

**Section 6**

# Pricing Summary

Motorola is pleased to provide the following services to the Polk County BOCC.

## 6.1 Services

Description	Price (\$)
Implementation Services w/ Warranty	\$1,090,350.00
MPA Discount	\$0.00
<b>MPA Price</b>	\$1,090,350.00
Additional Discount As Proposed	-\$241,354.00
<b>Total System Services:</b>	\$848,996.00

### Payment Milestones

Customer will make payments to Motorola within forty-five (45) days after the date of each invoice. Customer will make payments when due in the form of a check, cashier’s check, or wire transfer drawn on a U.S. financial institution. If Customer has purchased additional Professional or Subscription services, payment will be in accordance with the applicable addenda. Payment for the System purchase will be in accordance with the following milestones.

#### System Purchase

- 1. 15% of the System Price due upon placement of order (due upon receipt of PO);**
- 2. 60% of the System Price due upon Shipment from CCSI Staging;**
- 4. 20% of the System Price due upon Installation at Customer Sites;**
- 5. 5% of the System Price due upon Final Acceptance.**

Motorola reserves the right to invoice for installations completed on a site-by-site basis, when applicable. The value of services performed will be determined by the value performed as a percentage of the total milestone value. Unless otherwise noted, applicable discounts are based upon all items proposed and overall system package. For invoicing purposes only, discounts will be applied proportionately to the total agreement price.

## Section 7

# Procurement Documentation

The products and services described in this proposal shall be delivered under the terms and conditions of the Master Purchase Agreement #15-009, signed between Motorola and Polk County on February 3<sup>rd</sup>, 2015.