Attachment 1: Estimates for Audio and Visual Technology for Council Chambers January 27, 2020

Item	Budget Estimates

Option 1: Presentation and Media Delivery System – IP Computer Network $37,000

This Presentation and Media Delivery option provides administration with a control panel for flexible and easy control of 4 media inputs allowing any input such as laptop or tablet to be displayed on any or all displays such as projectors. It also ensures that audio for video presentations will be heard over the existing speakers.

This option follows the original intent to implement a fully networked system approach, which ensures full scalability using standard off-the-shelf ethernet switches. It provides the presentation and media portion of the original proposal presented on October 21, 2019 as well as the backend control systems in a way that allows other components to be added at a later date.

This approach enables all devices (audio, control, etc) to be integrated for a complete system once all components are upgraded, which limits Council's exposure to a total system failure should any one device fail.

This option uses existing microphones. Addition B is needed to increase audio quality within Chambers and especially for recorded and/or streamed audio.

This option does not include audio processing which would need to be added later to address sound quality.

a) Cost Breakdown: Hardware: $27,150 / Labour: $9,850

b) Control System
   - 10" Touch screen panel at Administration's desk to control system power and switching between media inputs

c) Video over IP technology provides a flexible roadmap to add additional inputs and outputs in the future. This option includes the following.
   - 4 input plates and IP encoders for presenters and administration
   - 2 outputs and IP decoders to existing projectors
   - 1 input and IP encoder from E-scribe voting system
   - VLAN switch
   - Category 6 wiring throughout the system

d) Components Details

Description	Quantity	Component Options
Touchpanel - 10" tabletop	1	AMX MT-1002 or Crestron TSW-1060
Control Processor	1	AMX NX-2200 or Crestron CP3N
VLAN Layer 3 MNG switch	1	CISCO SG350 series
HDMI wallplate encoder	4	AMX SVSI 2300 series or Crestron NVX series
IP media decoders	3	AMX SVSI 2300 series or Crestron NVX series
IP media encoders	2	AMX SVSI 2300 series or Crestron NVX SERIES
Cable package	1	Custom
Motorized screens	2 - existing	
Projectors	2 - existing	
Wireless presentation system	1 - existing	

e) Audio output from the Media Delivery system will feed into the existing audio hardware (no additional audio processing or upgrades are included in this option)

f) New equipment will be mounted in existing equipment rack

Option 2: Presentation and Media Delivery System - Matrix Switcher $34,800

Like Option 1, the system provides full presentation and media switching control allowing any input to be displayed on any or all displays. Included in the Matrix Switcher is a full featured control processor, audio signal processor, and amplifier, making this option an excellent value when considering its initial investment cost. The device can also be managed over the IP computer network.

Option 2 provides the added benefit of the control and audio processing built into the same device, with lower cost than option 1 that provides media switching and control only. It includes extra audio processing that would need to be added later with Option 1.

However, this option is not open architecture, meaning that the device must be purchased with enough connections to meet future needs which limits the flexibility to expand in the future. As well, there is a slight liability in that the majority of the functionality is contained in a single box, which, if it fails, will result in a total loss of operations.

This option uses existing microphones. Addition B is needed to increase audio quality within Chambers and especially for recorded and/or streamed audio.

a) Cost Breakdown: Hardware: $24,500 / Labour: $10,300

b) Control System Processor Integrated into Matrix Switcher hardware
   - 10" Touch screen panel at admin desk to control system power and media input switching

c) Media Delivery system based on a fixed input/output count matrix switcher frame
   - 4 input plates distributed at Council desk
   - Outputs (2) to existing projectors
   - Input from e-Scribe voting system

d) Matrix Switcher includes built-in audio processing and Audio Amplifier for media inputs and two (2) external microphone inputs.
   - Audio processing will assist in maximizing performance of Media inputs and existing loudspeakers.
   - Existing microphone system hardware to feed into Matrix switcher. No significant benefit is realized for the existing microphone system performance.

e) Component Details

Description	Quantity	Component Options
Touchpanel - 10" tabletop	1	Extron TLP PRO 1025T
Ethernet Swith with PoE	1	CISCO, LUXUL
Matrix Switcher	1	Extron DTPCrossPoint 108 4K with Link license / controller
Power sequencer	1	Furman CN-2400S, Surgex SEQ-1U
Equipment rack & accessories	1	Middle Atlantic ERK series
HDMI receivers	2	Extron DTP HDMI 4K 230 RX
HDMI transmitters	2	Extron DTP HDMI 4K 230 TX
HDMI wallplate transmitter	1	Extron DTP T UWP 4K 232D
Motorized screens	2 - existing	
Projectors	2 - existing	
Wireless presentation system	1 - existing	

f) Includes supply and installation of new lockable, metal equipment rack.

ADDITION A: Fixed Camera and Streaming Appliance $6,000

   a) Cost Breakdown: Hardware: $5100 / Labour: $900

   b) High resolution, wide angle lens fixed position camera

   c) Streaming encoder

   d) Component Details

Description	Quantity	Component Options
Fixed, wide angle lens camera	1	Panasonic AW-UE4,
Streaming encoder	1	Matrox Monarch HD, AJA HELO
Streaming encoder rack kit	1	Matrox, AJA
Camera wall mount	1	Panasonic
Cable package	1	Custom

ADDITION B: Discussion Microphone System and Loudspeaker Upgrade $23,800

This addition will significantly improve the audio clarity, deliver feedback free performance, and offer improved discussion management for council discussions. It can be combined with either Option 1 or Option 2.

The addition of the discussion system also directly impacts the quality of the audio that is recorded and/or streamed outside the building for public viewing.

   a) Cost Breakdown: Hardware: $18,600 / Labour: $5200

   b) Wired Discussion Microphone System

- 15 Microphone stations
- 15 Gooseneck mics with Tricolor LED rings
- Main conference processor
- Capable of recording meeting discussion audio to connected USB storage device

   c) Upgraded loudspeakers to maximize sound quality and coverage for gallery area

   d) Component Details

Description	Quantity	Component Options
Discussion control unit	1	Audio Technica ATUC-50CU
Delegate station	15	Audio Technica ATUC-50DU
Gooseneck microphone	15	Audio Technica ATUC-M58H
Ceiling speakers	8	Community D6, Martin Audio C6.8T
Cable package	1	Custom

ADDITION C: Projector and Screen Upgrade $32,500

   e) Cost Breakdown: Hardware: $26,500 / Labour: $6000

   f) 6000 Lumen Laser projector with lens

   g) Replacement widescreen format motorized screens

   h) Component Details

Description	Quantity	Component Options
Laser projector	2	Epson PRO L1100 with lens or Panasonic PT-MZ670U with lens
Motorized screen	2	DA-LITE or Draper
Projector mounts	2	Chief, Peerless, or Crimson AV