



(REFERENCE COPY - Not for submission)

FCC Form 399: Reimbursement Request

Facility **72098** | Service: **DTV** | Call **WGBX-TV** | Channel: **43 (UHF)** |
ID:
File **0000028580**
Number:
FRN: **0003764560** | Date **09/23**
Submitted: **/2019**

Applicant Information

Applicant Name, Type, and Contact Information

Applicant	Address	Phone	Email	Applicant Type
WGBH EDUCATIONAL FOUNDATION	Eric Brass 1 Guest Street Boston, MA 02135 United States	+1 (617) 300-4405	ERIC_BRASS@WGBH.ORG	Not-for-Profit

Reimbursement Contact Information

Reimbursement Contact Name and Information

Applicant	Address	Phone	Email
[Confidential]			

Preparer Contact Information

Preparer Contact Name and Information

Applicant	Address	Phone	Email
Emeric Feldmar <i>Director of Engineering</i> <i>WGBH Educational Foundation</i>	Emeric Feldmar 1 Guest Street Boston, MA 02135 United States	+1 (617) 300-2371	emeric_feldmar@wgbh.org

**Broadcaster
Information
and
Transition
Plan**

Question	Response
Will the station be sharing equipment with another broadcast television station or stations (e.g., a shared antenna, co-location on a tower, use of the same transmitter room, multiple transmitters feeding a combiner, etc.)? If yes, enter the facility ID's of the other stations and click 'prefill' to download those stations' licensing information.	Yes
Briefly describe transition plan	WGBX will operate on Ch. 43 from an interim site for 10-12 mos. while extensive tower work is conducted and then resume operations on Ch. 32 at its original tower. After the transition, WGBX will retune its interim transmitter to replace its existing aux.

Transmitters

Section	Question	Response
Transmitter Related Expenses	Do you have transmitter related expenses?	Yes

**Auxiliary
Transmitter****Add Transmitter Information**

Section	Question	Response
Existing Transmitter Description	Type of change	Retune Existing
	Use	Auxiliary (Backup)
	Ownership	Owned
	Owner	N/A
	Is this transmitter currently shared with another station?	No
	Is this transmitter currently in operating condition?	Yes
Existing Transmitter Manufacturer and Type	Manufacturer	Harris

Model	Ranger CZ1000L
Year	2011
Type	Solid State
Solid State Cooling	Air Cooled
Solid State Power capacity	1 kW

Auxiliary Transmitter

Retuning Transmitter Costs

Section	Question	Response
New IOT Tubes	Number of Tubes (including accessories) needed	N/A
New Mask Filter	Power	30 kW
	Other Power	N/A
New Exciter	Is a new exciter needed?	No

Auxiliary Transmitter

Other Transmitter Costs

Section	Question	Response
Electrical Service	Service Entrance (3 phases 800A 208V)	No
	Switchgear (industrial 800 amp)	No
	Transformer (480V)	No
	Power	N/A
	Rigid Conduit and Wiring	No
	Size	N/A
	Length	N/A
	Other Electrical Service	No
	Description	N/A
HVAC Service	Does the replacement transmitter require HVAC Service?	No

	Type	N/A
	Size	N/A
	Other Size	N/A
Transmitter Building Addition/Modification or Leasehold Improvement	Does the Transmitter Building require an addition, modification, other leasehold improvement?	No
	Size	N/A
Channel 14 Costs	Is an RF Consulting Engineer needed?	N/A
	Is a channel 14 Mask Filer needed?	N/A
	Is additional field engineering time needed?	N/A
	Number of Days	N/A

Auxiliary Transmitter **Other Transmitter Cost Not Listed**
Information not provided.

**Primary
Transmitter**

Add Transmitter Information

Section	Question	Response
Existing Transmitter Description	Type of change	Purchase New
	Use	Primary (Main)
	Description of Use	N/A
	Ownership	Owned
	Owner	N/A
	Site	N/A
	Is this transmitter currently shared with another station?	No
	Is this transmitter currently in operating condition?	Yes
Existing Transmitter Manufacturer and Type	Manufacturer	
	Model	Millennium CTT-U- DCX-1H
	Year	2001
	Type	Inductive Output Tube
	IOT Power Type	Single
	Power Capacity	22.3 kW

**Primary
Transmitter**

New Transmitter Costs

Section	Question	Response
New Transmitter	Use	Primary (Main)
	Change Type	Purchase New
	Is this a request for upgraded equipment?	Yes
	Manufacturer	
	Model	THU9-60 EVO 88.8 kW
	Transmitter Type	Solid State
	Solid State Cooling	Liquid Cooled
	Solid State Power capacity	90 kW
	Justification for New Transmitter	See attachment "Transmitter Justification"

**Primary
Transmitter**

Other Transmitter Costs

Section	Question	Response
Electrical Service	Service Entrance (3 phases 800A 208V)	No
	Switchgear (industrial 800 amp)	No
	Transformer (480V)	Yes
	Power	300 kVA
	Rigid Conduit and Wiring	No
	Size	N/A
	Length	N/A
	Other Electrical Service	Yes

	Description	Conduit and wiring material and labor costs required for new transmitter.
HVAC Service	Does the replacement transmitter require HVAC Service?	No
	Type	N/A
	Size	N/A
	Other Size	N/A
Transmitter Building Addition/Modification or Leasehold Improvement	Does the Transmitter Building require an addition, modification, other leasehold improvement?	No
	Size	N/A
Channel 14 Costs	Is an RF Consulting Engineer needed?	N/A
	Is a channel 14 Mask Filer needed?	N/A
	Is additional field engineering time needed?	N/A
	Number of Days	N/A

Primary Transmitter **Other Transmitter Cost Not Listed**

Name	Description
RF Monitor	RF Monitor System

**Interim
Transmitter**

New Transmitter Costs

Section	Question	Response
New Transmitter	Use	Interim
	Description of Use	N/A
	Change Type	Purchase
	Manufacturer	
	Model	THU9-EVO 73.5 kW
	Transmitter Type	Solid State
	Solid State Cooling	Liquid Cooled
	Solid State Power capacity	75 kW
	Justification for New Transmitter	Transitional site required to maintain full power operations during the 10-12 months while a reinforcement and new combiner system are installed on the existing tower.

**Interim
Transmitter**

Other Transmitter Costs

Section	Question	Response
Electrical Service	Service Entrance (3 phases 800A 208V)	Yes
	Switchgear (industrial 800 amp)	Yes
	Transformer (480V)	Yes
	Power	300 kVA
	Rigid Conduit and Wiring	Yes

	Size	4 inches
	Length	150.0 feet
	Other Electrical Service	No
	Description	N/A
HVAC Service	Does the replacement transmitter require HVAC Service?	Yes
	Type	Cooling Only
	Size	20 tons
	Other Size	N/A
Transmitter Building Addition/Modification or Leasehold Improvement	Does the Transmitter Building require an addition, modification, other leasehold improvement?	Yes
	Size	250.0 square feet
Channel 14 Costs	Is an RF Consulting Engineer needed?	N/A
	Is a channel 14 Mask Filer needed?	N/A
	Is additional field engineering time needed?	N/A
	Number of Days	N/A
Inside RF System	Is an additional interior RF system required to support this interim transmitter?	Yes

Interim Transmitter **Other Transmitter Cost Not Listed**

Name	Description
RF Monitoring	RF monitoring system
Engineering and Design	Interim and Main: Site Survey and Lidar Scanning, Outdoor Cooling Equipment Study, Design Coordination and Construction/Permit Set, Construction Phase Services-Site Inspection Visits /Punchlist
Microwave Link to Interim Site	Link from studio to interim transmitter site

Antennas

Section	Question	Response
Antenna Related Expenses	Do you have antenna related expenses?	Yes

**Primary
Antenna**

Add Antenna Information

Section	Question	Response
Existing Antenna Description	Type of change	Lease New
	Antenna Use	Primary (Main)
	Description of Use	N/A
	Ownership	Leased
	Owner	American Tower
	Site	N/A
	Is this antenna currently shared with any other stations?	Yes
	Is this antenna directional?	No
	Is antenna in operating condition?	Yes
	Is antenna located on or in close proximity to an antenna farm?	No
Existing Antenna Manufacturer and Type	Class	Full Power
	Mounting	Top Mount
	Antenna position in stack	Bottom
	Polarization	Horizontal
	Type	Broadband Panel
	Number of Stations Supported	5
	Number of Panels	24
	Design power capacity in use	87.1 %
	Lower Limit	500.00 MHz
	Upper Limit	660.00 MHz
	Other Antenna Type	N/A
	ERP: (Effective Radiated Power)	625.0 kW

	Manufacturer	
	Model	TAD24UDA-5-60MR
	Year	2001

**Facility ID's and Call Signs of
all stations with whom the
antenna is shared.**

Facility ID	Call Sign
72099	WGBH-TV
73982	WSBK-TV
25456	WBZ-TV
65684	WCVB-TV

**Primary
Antenna**

New Antenna Costs

Section	Question	Response
New Antenna Description	Use	Primary (Main)
	Description of Use	N/A
	Change Type	Lease New
	Is this a request for upgraded equipment?	Yes
	Ownership	Leased
	Owner	American Tower
	Is antenna shared?	Yes
	Is antenna directional?	No
	Will antenna be located on or in close proximity to an antenna farm?	No
New Antenna Manufacturer and Types	Class	Full Power
	Mounting	Top Mount
	Antenna position in stack	Not in Stack
	Polarization	Circular
	Type	Broadband Panel
	Number of Stations Supported	4
	Number of Panels/Bays	14
	Lower Limit	470.00 MHz
	Upper Limit	698.00 MHz
	Design power capacity in use	85.0 %
	Other Antenna Type	N/A
	ERP: (Effective Radiated Power)	500.0 kW
	Manufacturer	

Model	TUM-AP-04-14/56-2-T
Year	2018
Justification for New Antenna	Existing antenna not usable at new channel assignments

Primary Antenna

Other Antenna Costs

Section	Question	Response
Combiner for Shared Antenna	Do you need a Combiner for a Shared Antenna?	Yes
	Type	New
	Number of channels supported	4
	Frequencies of channels supported	RF channel
	Frequency	N/A
	Do you need a combiner output splitter /switcher for dual feed lines?	No
Elbow Complex	Do you require the separate purchase of the Elbow Complex?	Yes
	Broadband or Single Channel?	Broadband
	Feed Line Size	7 3/16 inches inches
Side Mount Brackets	Do you require the separate purchase of side mount brackets for a high power antenna?	No
Pattern Scatter Analysis	Do you require separate purchase of pattern scatter analysis for a side mount high or medium power antenna?	No
Sweep Test	Do you require the sweep testing of transmission line and antenna?	Yes

Enter a list of RF channel numbers.

RF Channel Number
20
21
32
33

Primary
Antenna

Other Antenna Cost Not Listed

Name	Description
Combiner Installation	Installation and commission of combiner system. See ATC quotation.

**Interim
Antenna****New Antenna Costs**

Section	Question	Response
New Antenna Description	Use	Interim
	Description of Use	N/A
	Change Type	Purchase New
	Ownership	Leased
	Owner	American Tower
	Is antenna shared?	Yes
	Is antenna directional?	Yes
	Will antenna be located on or in close proximity to an antenna farm?	No
New Antenna Manufacturer and Type	Class	Full Power
	Mounting	Top Mount
	Antenna position in stack	Bottom
	Polarization	Elliptical
	Type	Broadband Panel
	Number of Stations Supported	4
	Number of Panels/Bays	14
	Lower Limit	470.00 MHz
	Upper Limit	608.00 MHz
	Design power capacity in use	85.0 %
	Other Antenna Type	N/A
	ERP: (Effective Radiated Power)	200.0 kW
	Manufacturer	
	Model	TUM-AP-04- 14/56-2-B

Year	2018
Justification for New Antenna	Interim antenna required for transitional site during the 10-12 months while a reinforcement and new combiner system are installed on the existing tower.

Interim Antenna

Other Antenna Costs

Section	Question	Response
Combiner for Shared Antenna	Do you need a Combiner for a Shared Antenna?	Yes
	Type	New
	Number of channels supported	4
	Frequencies of channels supported	RF channel
	Frequency	N/A
	Do you need a combiner output splitter /switcher for dual feed lines?	No
Elbow Complex	Do you require the separate purchase of the Elbow Complex?	Yes
	Broadband or Single Channel?	B
	Feed Line Size	8 3/16 inches
Side Mount Brackets	Do you require the separate purchase of side mount brackets for an antenna?	No
Pattern Scatter Analysis	Do you require separate purchase of pattern scatter analysis for a side mount high or medium power antenna?	No

Sweep Test	Do you require the sweep testing of transmission line and antenna?	Yes
-------------------	--	-----

Enter a list of RF channel numbers.

RF Channel Number
33
20
21
32

Interim
Antenna

Other Antenna Cost Not Listed

Name	Description
Tower rental	One-time tower rental during market repack period.
Combiner Installation	WGBX shared expense of installation, testing and commissioning of combiner
Nitrogen Generator	Nitrogen Generator Upgrade.

Transmission Line

Section	Question	Response
Transmission Line Related Expenses	Do you have transmission line related expenses?	Yes

Primary Transmission Line**Existing Transmission Line**

Section	Question	Response
Existing Transmission Line Description	Type of change	Utilize Existing
	Use	Primary (Main)
	Description of Use	N/A
	Ownership	Leased
	Owner	American Tower
	Site	N/A
	Is the existing transmission line shared with another station or stations?	Yes
	Is Transmission Line in operating condition?	Yes
Existing Transmission Line Manufacturer and Type	Manufacturer	Dielectric
	Type	Rigid
	Diameter	8 3/16 inches
	Other Diameter	N/A
	Segment Length	Broadband
	Other Segment Length	N/A
	Number of parallel runs	3
	Length	1469 feet per run

Facility ID's and Call Signs of all stations with whom the transmission line is shared.

Facility ID	Call Sign
72099	WGBH-TV
25456	WBZ-TV
65684	WCVB-TV
73982	WSBK-TV

Primary Transmission Line

Other Transmission Line Expenses Not Listed

Name	Description
Transmission line refurbish	Refurbish existing transmission lines per ATC.

Interim Transmission Line

New Transmission Line

Section	Question	Response
New Transmission Line Costs	Use	Interim
	Description of Use	N/A
	Change Type	Lease New
	Type	Rigid
	Diameter	8 3/16 inches
	Segment Length	Broadband
	Other Segment Length	
	Number of parallel runs	2
	Length	1250 feet per run
	Justification for New Transmission Line	Interim site requires transmission line to

	accommodate interim antenna.
--	------------------------------------

Interim Transmission Line	Other Transmission Line Expenses Not Listed
------------------------------	---

Information not provided.

**Tower
Equipment
And
Rigging
Costs**

Section	Question	Response
Tower Equipment or Rigging Costs Changes	Do you have tower equipment or rigging costs changes?	Yes

**Auxiliary
Tower**

Add Tower

Section	Question	Response
Existing Tower Description	Type of change	Modify Existing
	Tower Use	Auxiliary (Backup)
	Description of Use	Interim Tower
	Ownership	Leased
	Is this tower consider Complex?	Candelabra
	Is this tower currently shared with any other stations?	Yes
	One or more FM, AM or TV radio broadcaster(s)	Yes
	Others Types of Users	No
	Is tower documented for structural analysis?	Yes
	Is tower compliant with Rev G?	Unknown
Existing Tower Structure Registration	Do you have a tower registration number?	Yes
	ASR Number	1004233
Coordinates (NAD83 (North American Datum of 1983))	Latitude (NAD83)	42° 18' 10.7" N-
	Longitude (NAD83)	071° 13' 04.9" W-
	Overall Structure Height	1200.77 feet
	Support Structure Height	1101.04 feet
	Ground Elevation Above Mean Sea Level (AMSL)	150.92 feet
	Structure Type	GTOWER - Guyed

		Structure Used for Communication Purposes
	Tower Owner	American Towers, LLC
	Date Constructed	04/19/2005

**FM, AM or TV radio
broadcasters. Facility ID's,
Call Signs and Services of
other broadcast stations with
whom the tower is shared**

Facility ID	Call Sign	Service
49385	WXRV	FM
1901	WBZ-FM	FM
13806	WZLX	FM
26897	WWBX	FM
9639	WODS	FM
6463	WFXT	DTV
73238	WLVI	DTV

**Auxiliary
Tower**

Tower Modification Costs

Section	Question	Response
Engineering Study	Please what type of engineering study is required, if any:	Study needed for tower with candelabra
Tower Reinforcements	Please select whether tower reinforcements are needed:	Minor Reinforcements needed

**Auxiliary
Tower**

Tower Rigging Costs

Section	Question	Response
---------	----------	----------

Tower Rigging Costs	Complex Tower	Candelabra
Helicopter Services Required	Are helicopter services required?	No

**Auxiliary
Tower**

Other Tower Expenses Not Listed

Name	Description
Tower Permits	Permits

**Primary
Tower****Existing Tower**

Section	Question	Response
Existing Tower Description	Type of change	Modify Existing
	Tower Use	Primary (Main)
	Description of Use	N/A
	Ownership	Leased
	Is this tower consider Complex?	No
	Is this tower currently shared with any other stations?	Yes
	One or more FM, AM or TV radio broadcaster(s)	Yes
	Others Types of Users	No
	Is tower documented for structural analysis?	Yes
	Is tower compliant with Rev G?	Yes
Existing Tower Structure Registration	Do you have a tower registration number?	Yes
	ASR Number	1003433
Coordinates (NAD83 (North American Datum of 1983))	Latitude (NAD83)	42° 18' 37.0" N-
	Longitude (NAD83)	071° 14' 12.0" W-
	Overall Structure Height	1296.24 feet
	Support Structure Height	1192.24 feet
	Ground Elevation Above Mean Sea Level (AMSL)	152.89 feet
	Structure Type	GTOWER - Guyed Structure Used for Communication Purposes
	Tower Owner	American Tower, LLC
	Date Constructed	01/01/1957

**FM, AM or TV radio
broadcasters. Facility ID's,
Call Signs and Services of
other broadcast stations with
whom the tower is shared**

Facility ID	Call Sign	Service
65684	WCVB-TV	DTV
72099	WGBH-TV	DTV
68241	WBUR-FM	FM
10542	WKLB-FM	FM
25456	WBZ-TV	DTV
73982	WSBK-TV	DTV

**Primary
Tower**

Tower Modification Costs

Section	Question	Response
Engineering Study	Please what type of engineering study is required, if any:	Study needed for undocumented /poorly documented tower
Tower Reinforcements	Please select whether tower reinforcements are needed:	Minor Reinforcements needed

**Primary
Tower**

Tower Rigging Costs

Section	Question	Response
Tower Rigging Costs	Complex Tower	N/A
Helicopter Services Required	Are helicopter services required?	No

Primary
Tower

Other Tower Expenses Not Listed

Name	Description
Tower Permit Package	Generation of a construction drawing package per ATC quote

**Outside
Professional Services Costs**

Section	Question	Response
Outside Project Management Services	Do you require outside project management services?	Yes
	Number of Hours	95
	Explanation	American Tower (ATC) outside project management required to coordinate WGBX w multiple broadcasters including interim move to second tower with shared antenna and related infrastructure
Outside RF consulting Engineering Services	Perform engineering study for new channel assignment and antenna development	Yes
	Prepare engineering section of Form FCC Construction Permit Application	Yes
	For Auxiliary Facility	No
	For Main Facility	Yes
	Prepare engineering section of Form FCC License to Cover Application	Yes
	For Auxiliary Facility	No
	For Main Facility	Yes
	Prepare request for Special Temporary Authority	Yes
	Quantity	2
	Do you have Distributed Transmission System engineering services?	N/A
	Critical Facility	N/A

	Terrain-Shielded Facility	N/A
Attorney and Other Outside Consulting Services	Prepare and file Form FCC Construction Permit Application	Yes
	For Auxiliary Facility	No
	For Main Facility	Yes
	Prepare and file Form FCC License to Cover Application	Yes
	For Auxiliary Facility	No
	For Main Facility	Yes
	Prepare request for Special Temporary Authority	Yes
	Quantity	2
	NEPA Section 106 environmental review	No
	Environmental Assessment	No
	ASR Modification	No
	FAA Consultation (including preparation of FAA Form 7460)	No
	Negotiation of Lease and other Matter for Shared Locations	Yes
	Prepare or Review FCC Form 399 for Reimbursement	Yes
	Address transition timing and coordination issues w/ other stations and wireless providers	Yes
RF Field Engineering Services	Comprehensive coverage verification via field study	Yes
	RF exposure measurements	No
	Additional Field Engineering Service	No
	Number of Days	N/A
	Justification	N/A

Outside Other Professional Services Expenses Not Listed
Professional Services Costs Services not provided.

Other Expenses

Section	Question	Response
AM Pattern Disturbance	Is an Impact Study needed?	No
	Is Remediation needed?	No
Facility Expenses	Name	N/A
	Other Distributed Transmission System Expenses Not listed	N/A
	Name	N/A
	Is Notification of a Medical Facility required as a result of DTV broadcasting?	Yes
Permit and Filing Costs	Local Zoning	Yes
	Non-zoning permits	Yes
	BLM or NFS Coordination	No
	FCC Construction Permit Minor Change	Yes
	FCC License to Cover Application	Yes
	FCC Special Temporary Authority Application	Yes
Other Miscellaneous Expenses	Does this relocation require paying Disposal Costs (for equipment and other waste, net of any salvage value)?	Yes
	Does this relocation require Equipment Delivery or Handling Charges not otherwise included in individual item costs?	Yes
	Does this relocation require Equipment Storage?	Yes
	Does this relocation require the Development and Airing of an Announcement regarding an upcoming channel change?	Yes
	Does this relocation require MVPD Notification of a Channel Change?	Yes

**Other
Expenses**

Other Expenses Not Listed

Name	Description
Pre planning survey and engineering	Site and transmitter building drawings.
RF System Commission	Testing of the combiner system for optimal transmission patterns per ATC documentation
Site coordination meetings	Site coordination with broadcasters, contractors and vendors involved with the site deliveries and construction. Per attached ATC documentation
Engineering Construction Services	Site Survey and Lidar Scanning; Outdoor Cooling Equipment Study; Design Coordination and Construction/Permit Set; Construction Phase Services and Project Expenses

Cost Information

Transmitters

Where no predetermined cost estimate is available, any estimate provided will also become the predetermined cost (displayed in italics).

Description	Predetermined Cost Estimate	Estimated Cost	Estimated Cost Justification	Actual Cost	Actual Cost Justification
Interim Transmitter THU9-EVO 73.5 kW	\$2,672,797.61	\$2,233,498.93		\$632,081.53	
UHF - Liquid Cooled Solid State Transmitter 68.5 - 75 kW	\$1,999,000.00	\$1,550,180.32	N/A	\$465,054.10	Like-for-Like total of \$1,202,579.92 vs. upgraded equipment purchase total of \$1,550,180.32 for WGBX CH43 (Interim) THU9-EVO 73.5kW ATSC /67kW OFDM.
Service entrance 3 phase/800 amp/208 volt	\$14,400.00	\$2,740.00	N/A	\$685.00	N/A
Switchgear - industrial 800 amp	\$38,200.00	\$7,260.00	N/A	\$1,815.00	N/A
4" Rigid Conduit and Wiring (Cost per foot)	\$15,150.00	\$2,920.00	200' of 2" conduit @\$25/ft 100' of 4" conduit @\$96/ft	\$730.08	N/A
Other -- HVAC Service Type: C Size:20 (Other)	<i>\$26,000.00</i>	\$26,000.00	Includes Ice Shield for HVAC \$4,000	\$6,500.00	N/A

Other -- Building Addition Size: 250.0	\$31,591.82	\$31,591.82	Includes Ice shield and permitting per ATC quote \$26,800.00. Bomara Assoc. \$4,791.82	\$5,691.82	N/A
Transformer 3 phase /480v - 300 KVA	\$36,800.00	\$108,651.00	ATC quote \$19,200. C&W quote \$89,451 The ATC Needham site did not have adequate available power to service the interim TRX. Add. utility power was required, as well as associated switch gear and transformers beyond initial estimate.	\$80,833.35	N/A
Microwave Link to Interim Site	\$150,094.77	\$150,094.77	Per attached quote from Vislink. \$119,289.40 Evertz quote CCCQ55261- 04 50% cost share. \$24,370.87 Evertz quote CCCQ47196- 02 50% cost share \$6,434.50	\$70,772.18	N/A
Engineering	\$192,061.02	\$192,061.02	Main:	N/A	N/A

and Design			\$112,992.35 Interim: \$79,068.67 Site Survey and Lidar Scanning Outdoor Cooling Equipment Study Design Coordination and Construction /Permit Set Construction Phase Services (Site Inspection Visits /Punchlist)		
RF Monitoring	\$22,000.00	\$22,000.00	N/A	N/A	N/A
UHF inside RF system including switching	\$147,500.00	\$140,000.00	N/A	\$0.00	N/A
Primary Transmitter THU9-60 EVO 88.8kW	\$2,718,800.00	\$2,194,418.59		\$360,773.98	
UHF - Liquid Cooled Solid State Transmitter 86.8 . 106 kW	\$2,630,000.00	\$2,112,418.59	N/A	\$360,773.98	Like-for-Like total of \$1,202,579.92 vs. upgraded equipment purchase total of \$2,112,418.59 for WGBX CH43 (Main) THU9-60 88.5 kW ATSC/80. 5 kW OFDM.
Other Electrical	\$30,000.00	\$30,000.00	N/A	\$0.00	N/A

Service: Conduit and wiring material and labor costs required for new transmitter.					
RF Monitor	\$22,000.00	\$22,000.00	N/A	\$0.00	N/A
Transformer 3 phase /480v - 300 KVA	\$36,800.00	\$30,000.00	N/A	\$0.00	N/A
Auxiliary Transmitter Ranger CZ1000L	\$137,800.00	\$44,131.25		\$0.00	
30 kW mask filter	\$32,600.00	\$30,000.00	Existing backup transmitter cannot be retuned. Estimate is for retuning interim transmitter for post- transition channel, which is less expensive than replacing existing backup transmitter.	\$0.00	N/A
UHF and VHF - minor banding issues	\$105,200.00	\$14,131.25	Existing backup transmitter cannot be retuned. Estimate is for retuning interim transmitter for post-	N/A	N/A

transition
channel,
which is less
expensive
than
replacing
existing
backup
transmitter.

Sub-total	\$5,529,397.61	\$4,472,048.77	N/A	\$992,855.51	N/A
Total for all systems	\$10,436,487.61	\$5,816,343.77	N/A	\$1,378,653.94	N/A

Components

Actual Information	
Description	File Name
UHF - Liquid Cooled Solid State Transmitter 68.5 - 75 kW	<div> <div>Component Description:</div> <div>60% payment due Upon Delivery of Like-for-Like total of \$1,202,579.92 for WGBX CH43 (Interim) THU9-EVO 73.5kW ATSC /67kW OFDM.</div> <div>Amount:</div> <div>\$721,547.95</div> </div> <div> <div>Component Description:</div> <div>60% payment due Upon Delivery of Like-for-Like total of \$1,202,579.92 for WGBX CH43 (Interim) THU9-EVO 73.5kW ATSC /67kW OFDM.</div> <div>Amount:</div> <div>\$721,547.95</div> </div>

	Component Description: 30% Downpayment for WGBX CH43 THU9-EVO 73.5 kW ATSC/67kW OFDM. Amount: \$465,054.10
Service entrance 3 phase /800 amp/208 volt	Component Description: Service entrance 3 phase/800 amp /208 volt. Amount: \$1,370.00 Component Description: Service entrance 3 phase/800 amp /208 volt Amount: \$1,370.00 Component Description: Service entrance 3 phase/800 amp /208 volt. Amount: \$685.00
Switchgear - industrial 800 amp	Component Description: Switchgear - Industrial 800 amp. Amount: \$3,630.00 Component Description: Switchgear - Industrial 800 amp Amount: \$3,630.00 Component Description: Switchgear - Industrial 800 amp Amount: \$1,815.00
4" Rigid Conduit and Wiring (Cost per foot)	

	Component Description: 2inch Rigid Conduit and Wiring (Cost per foot) \$500.00 4inch Rigid Conduit and Wiring (Cost per foot) \$960.17 Amount: \$1,460.17
	Component Description: 2inch Rigid Conduit and Wiring (Cost per foot) \$250.00 4inch Rigid Conduit and Wiring (Cost per foot) \$480.08 Amount: \$730.08
	Component Description: 2inch Rigid Conduit and Wiring (Cost per foot) \$500.00 4inch Rigid Conduit and Wiring (Cost per foot) \$960.17 Amount: \$1,460.17
Other -- HVAC Service Type: C Size:20 (Other)	Component Description: 20 Ton System \$11,000.00 Ice Shield for HVAC equipment \$2,000.00. Amount: \$13,000.00
	Component Description: 20 Ton System \$5,500.00 Ice Shield for HVAC equipment \$1,000.00 Amount: \$6,500.00

	<p>Component Description: 20 Ton System \$11,000.00 Ice Shield for HVAC equipment \$2,000.00</p> <p>Amount: \$13,000.00</p>
Other -- Building Addition Size: 250.0	<p>Component Description: 50% WGBX shared expense. UPS for transmitter electronics.</p> <p>Amount: \$4,791.82</p> <p>Component Description: Approx. 600 to 1500 square foot addition (costs vary with location, site access, and construction type) \$900.00 Testing for Asbestos and Lead Paint \$900.00</p> <p>Amount: \$1,800.00</p> <p>Component Description: 50% WGBX shared expense. UPS for transmitter electronics.</p> <p>Amount: \$4,791.82</p> <p>Component Description: Approx. 600 to 1500 square foot addition (costs vary with location, site access, and construction type) \$450.00 Testing for Asbestos and Lead Paint \$450.00</p> <p>Amount: \$900.00</p>

	<p>Component Description:</p> <p>Approx. 600 to 1500 square foot addition (costs vary with location, site access, and construction type)</p> <p>\$900.00 Testing for Asbestos and Lead Paint \$900.00</p> <p>Amount:</p> <p>\$1,800.00</p>
Transformer 3 phase/480v - 300 KVA	<p>Component Description:</p> <p>15% Progress payment for Interim electrical.</p> <p>Amount:</p> <p>\$13,417.65</p> <p>Component Description:</p> <p>30% Deposit for Interim electrical.</p> <p>Amount:</p> <p>\$26,835.30</p> <p>Component Description:</p> <p>Transformer 3 phase/480v- 500KVA \$4,600. Other Transmitter Cost Not Listed: New electrical sub-panels \$5,000.</p> <p>Amount:</p> <p>\$9,600.00</p> <p>Component Description:</p> <p>40% Progress payment for Interim electrical.</p> <p>Amount:</p> <p>\$35,780.40</p> <p>Component Description:</p> <p>40% Progress payment for Interim electrical.</p> <p>Amount:</p> <p>\$35,780.40</p>

	Component Description:	30% Deposit for Interim electrical.
	Amount:	\$26,835.30
	Component Description:	Transformer 3 phase/480v-500KVA \$4,600. Other Transmitter Cost Not Listed: New electrical sub-panels \$5,000.
	Amount:	\$9,600.00
	Component Description:	Transformer 3 phase/480v-500KVA \$2,300. Other Transmitter Cost Not Listed: New electrical sub-panels \$2,500.
	Amount:	\$4,800.00
Microwave Link to Interim Site	Component Description:	50% WGBX shared expense. Ethernet Transceiver.
	Amount:	\$6,434.50
	Component Description:	50% WGBX shared expense. Ethernet Transceiver \$24,370.88 minus 50% of credit for equipment exchange \$10,030.00.
	Amount:	\$14,340.88

	<p>Component Description: 50% WGBX shared expense. Ethernet Transceiver.</p> <p>Amount: \$6,434.50</p>
	<p>Component Description: 50% WGBX shared expense. Ethernet Transceiver.</p> <p>Amount: \$24,370.87</p>
	<p>Component Description: WGBX Cabot Street, Duplex NON-Standby STL /TSL STL - 7012.5 MHz and TSL 6912.5MHz. G3 - Antennas, Waveguide and accessories.</p> <p>Amount: \$49,996.80</p>
Engineering and Design	Information not provided.
RF Monitoring	Information not provided.
UHF inside RF system including switching	Information not provided.
UHF - Liquid Cooled Solid State Transmitter 86.8 . 106 kW	<p>Component Description: 60% payment due Upon Delivery of Like-for-Like Total of \$1,202,579.92 for WGBX (Main) THU9-60 EVO 88.5 kW ATSC/80. 5 kW OFDM.</p> <p>Amount: \$721,547.95</p>

	Component Description:	60% payment due Upon Delivery of Like-for-Like Total of \$1,202,579.92 for WGBX (Main) THU9-60 EVO 88.5 kW ATSC/80. 5 kW OFDM.
	Amount:	\$721,547.95
	Component Description:	30% Downpayment of Like-for-Like Total of \$1,202,579.92.
	Amount:	\$360,773.98
Other Electrical Service: Conduit and wiring material and labor costs required for new transmitter.	Information not provided.	
RF Monitor	Information not provided.	
Transformer 3 phase/480v - 300 KVA	Information not provided.	
30 kW mask filter	Information not provided.	
UHF and VHF - minor banding issues	Information not provided.	

Cost Information

Antennas

Where no predetermined cost estimate is available, any estimate provided will also become the predetermined cost (displayed in italics).

Description	Predetermined Cost Estimate	Estimated Cost	Estimated Cost Justification	Actual Cost	Actual Cost Justification
Interim Antenna TUM-AP-04-14/56-2-B	\$1,267,480.00	\$283,962.00		\$70,990.60	
UHF - High Power Top Mount (200-1000 kW), Four Station broadband panel antenna, elliptically or circularly polarized	\$1,090,000.00	\$71,302.00	N/A	\$17,825.60	N/A
Nitrogen Generator	<i>\$3,000.00</i>	\$3,000.00	Nitrogen Generator Upgrade.	\$750.00	N/A
Combiner Installation	<i>\$7,000.00</i>	\$7,000.00	N/A	\$1,750.00	N/A
Tower rental	<i>\$57,600.00</i>	\$57,600.00	One-time tower rental during market repack period.	\$14,400.00	N/A
Elbow complex, broadband, at antenna input, per 8 3/16. feedline (if needed)	\$18,950.00	\$6,660.00	N/A	\$1,665.00	N/A

New combiner, cost per channel (without antenna)	\$84,200.00	\$135,400.00	Actual cost from American Tower based on design and fabrication of the four station combining system.	\$33,850.00	N/A
Sweep test of existing antenna	\$6,730.00	\$3,000.00	N/A	\$750.00	N/A
Primary Antenna TUM-AP-04-14/56-2-T	\$1,209,030.00	\$240,000.00		\$61,937.50	
Elbow complex, broadband, at antenna input, per 7 3/16. feedline (if needed)	\$16,850.00	\$10,000.00	N/A	\$2,500.00	N/A
New combiner, cost per channel (without antenna)	\$84,200.00	\$83,750.00	Actual cost inclusive of \$8750 installation charge.	\$22,875.00	N/A
Combiner Installation	\$11,250.00	\$11,250.00	N/A	\$2,812.50	N/A
UHF - High Power Top Mount (200-1000 kW), Four Station broadband panel antenna, elliptically	\$1,090,000.00	\$130,000.00	\$126,250 plus side mount bracket expense of \$3,750.	\$32,500.00	N/A

or
circularly
polarized

Sweep test of existing antenna	\$6,730.00	\$5,000.00	N/A	\$1,250.00	N/A
Sub-total	\$2,476,510.00	\$523,962.00	N/A	\$132,928.10	N/A
Total for all systems	\$10,436,487.61	\$5,816,343.77	N/A	\$1,378,653.94	N/A

Components

Actual Information	
Description	File Name
UHF - High Power Top Mount (200-1000 kW), Four Station broadband panel antenna, elliptically or circularly polarized	Component Description:
	Four station broadband panel antenna, elliptically or circularly polarized.
	Amount:
	\$35,651.20
	Component Description:
	Four station broadband panel antenna, elliptically or circularly polarized.
	Amount:
	\$35,651.20
	Component Description:
	Four station broadband panel antenna, elliptically or circularly polarized
	Amount:
	\$17,825.60
Nitrogen Generator	

	<p>Component Description: Nitrogen Generator Upgrade.</p> <p>Amount: \$750.00</p>
Combiner Installation	<p>Component Description: Combiner installation.</p> <p>Amount: \$3,500.00</p> <p>Component Description: Combiner installation</p> <p>Amount: \$3,500.00</p> <p>Component Description: Combiner installation</p> <p>Amount: \$1,750.00</p>
Tower rental	<p>Component Description: ATC one-time tower rental during market repack period.</p> <p>Amount: \$28,800.00</p> <p>Component Description: ATC one-time tower rental during market repack period.</p> <p>Amount: \$28,800.00</p> <p>Component Description: ATC one-time tower rental during market repack period.</p> <p>Amount: \$14,400.00</p>
Elbow complex, broadband, at antenna input, per 8 3/16. feedline (if needed)	

	Component Description:	Elbow complex, single channel, at antenna input, per 8-3/16" feedline (if needed).
	Amount:	\$3,330.00
	Component Description:	Elbow complex, single channel, at antenna input, per 8-3/16" feedline (if needed).
	Amount:	\$3,330.00
	Component Description:	Elbow complex, single channel, at antenna input, per 8 3/16" feedline (if needed).
	Amount:	\$1,665.00
New combiner, cost per channel (without antenna)	Component Description:	New combiner, cost per channel (without antenna).
	Amount:	\$67,700.00
	Component Description:	New combiner, cost per channel (without antenna)
	Amount:	\$67,700.00
	Component Description:	New combiner, cost per channel (without antenna)
	Amount:	\$33,850.00
Sweep test of existing antenna		

	Component Description:	Sweep test of transmission line and antenna.
	Amount:	\$1,500.00
	Component Description:	Sweep test of transmission line and antenna.
	Amount:	\$1,500.00
	Component Description:	Sweep test of transmission line and antenna.
	Amount:	\$750.00
Elbow complex, broadband, at antenna input, per 7 3/16. feedline (if needed)	Component Description:	Elbow complex, broadband, at antenna input, per 8 3/16 feedline (if needed).
	Amount:	\$2,500.00
	Component Description:	Elbow complex, broadband, at antenna input, per 8 3/16 feedline (if needed).
	Amount:	\$2,500.00
New combiner, cost per channel (without antenna)	Component Description:	New combiner, cost per channel (without antenna).
	Amount:	\$22,875.00
	Component Description:	New combiner, cost per channel (without antenna).
	Amount:	\$22,875.00

Combiner Installation	<div> <div> Component Description: Amount: </div> <div> Combiner installation. \$2,812.50 </div> </div> <div> <div> Component Description: Amount: </div> <div> Combiner installation. \$2,812.50 </div> </div>
UHF - High Power Top Mount (200-1000 kW), Four Station broadband panel antenna, elliptically or circularly polarized	<div> <div> Component Description: Amount: </div> <div> \$31,562.50 UHF - High Power Top Mount (200-1000 kW) Four station broadband panel antenna, elliptically or circularly polarized. \$937.50 Side mount brackets for high power antennas. \$32,500.00 </div> </div> <div> <div> Component Description: Amount: </div> <div> \$31,562.50 UHF - High Power Top Mount (200-1000 kW) Four station broadband panel antenna, elliptically or circularly polarized. \$937.50 Side mount brackets for high power antennas. \$32,500.00 </div> </div>
Sweep test of existing antenna	<div> <div> Component Description: Amount: </div> <div> Sweep test of transmission line and antenna. \$1,250.00 </div> </div>

Component Description:

Sweep test of
transmission line
and antenna.

Amount:

\$1,250.00

Cost
Information

Transmission Line

Where no predetermined cost estimate is available, any estimate provided will also become the predetermined cost (displayed in italics).

Description	Predetermined Cost Estimate	Estimated Cost	Estimated Cost Justification	Actual Cost	Actual Cost Justification
Interim Transmission Line	\$997,500.00	\$87,900.00		\$21,975.00	
Rigid Transmission Line - copper, 8 3/16" broadband	\$997,500.00	\$87,900.00	Rigid Transmission Line - copper 8 3/16" \$84,900.00 and Nitrogen Generator Upgrade \$3,000.00.	\$21,975.00	N/A
Primary Transmission Line	\$0.00	\$0.00		\$0.00	
Transmission line refurbish	<i>\$0.00</i>	\$0.00	Cost to refurbish two (2) existing 8-3/16" transmission lines per ATC quote. IT HAS BEEN DETERMINED THAT THE EXPENSE IS NOT REIMBURSABLE UNDER THE FCC GUIDELINES.	\$0.00	N/A
Sub-total	\$997,500.00	\$87,900.00	N/A	\$21,975.00	N/A
Total for all systems	\$10,436,487.61	\$5,816,343.77	N/A	\$1,378,653.94	N/A

Components

Actual Information Description	File Name
--------------------------------	-----------

Rigid Transmission Line -
copper, 8 3/16" broadband

Component Description:

Rigid
Transmission Line
- copper 8 3/16"
\$42,450.00 and
Nitrogen
Generator
Upgrade
\$1,500.00.

Amount:

\$43,950.00

Component Description:

Rigid
Transmission Line
- copper 8 3/16"
\$42,450.00 and
Nitrogen
Generator
Upgrade
\$1,500.00.

Amount:

\$43,950.00

Component Description:

Rigid
Transmission Line
- copper 8 3/16"
\$21,225.00 and
Nitrogen
Generator
Upgrade \$750.00.

Amount:

\$21,975.00

Transmission line refurbish

Component Description:

\$12,187.50 8 3/16"
broadband
\$750.00 Nitrogen
Generator
Upgrade.

Amount:

\$12,937.50

Cost
Information

Tower Equipment and Rigging Costs

Where no predetermined cost estimate is available, any estimate provided will also become the predetermined cost (displayed in italics).

Description	Predetermined Cost Estimate	Estimated Cost	Estimated Cost Justification	Actual Cost	Actual Cost Justification
Primary Tower GTOWER	\$404,200.00	\$119,900.00		\$11,772.50	
Tower mapping for an undocumented /poorly documented tower and preparation of documentation necessary for tower load study	\$26,300.00	\$25,000.00	N/A	\$1,860.00	N/A
Tower Permit Package	\$9,400.00	\$9,400.00	Tower permit drawing plus ground & building A&E permit drawing per attached ATC quote \$4,700 + \$4,700.	\$2,350.00	N/A
Minor tower reinforcement /modifications	\$158,000.00	\$25,000.00	N/A	\$7,562.50	N/A
Tall Tower (greater than 500')	\$210,500.00	\$60,500.00	N/A	\$0.00	N/A
Auxiliary Tower GTOWER	\$608,400.00	\$167,900.00		\$41,437.57	
Complex Tower (includes, for example,	\$421,000.00	\$119,000.00	Rigging, testing for asbestos and lead paint, site	\$32,537.57	N/A

those with candelabras and/or stacked antennas)			security, public hearing, and tower rental per attached ATC quote		
Structural engineering tower load study for a documented tower with candelabra	\$20,000.00	\$19,000.00	N/A	\$1,425.00	N/A
Minor tower reinforcement /modifications	\$158,000.00	\$20,500.00	Major tower reinforcement /modification \$17,500 Construction project management (Tower modifications reinforcements and facilities) \$3,000	\$5,125.00	N/A
Tower Permits	\$9,400.00	\$9,400.00	Tower permit drawing plus ground & building A&E permit drawing per attached ATC quote	\$2,350.00	N/A
Sub-total	\$1,012,600.00	\$287,800.00	N/A	\$53,210.07	N/A
Total for all systems	\$10,436,487.61	\$5,816,343.77	N/A	\$1,378,653.94	N/A

Components

Actual Information Description	File Name
Tower mapping for an undocumented/poorly documented tower and	

preparation of
documentation necessary
for tower load study

Component Description:	Tower mapping for an undocumented /poorly documented tower and preparation of documentation necessary for tower load study
Amount:	\$620.00

Component Description:	Tower mapping for an undocumented /poorly documented tower and preparation of documentation necessary for tower load study.
Amount:	\$1,240.00

Component Description:	Tower mapping for an undocumented /poorly documented tower and preparation of documentation necessary for tower load study.
Amount:	\$1,240.00

Component Description:	Tower mapping for an undocumented /poorly documented tower and preparation of documentation necessary for tower load study
Amount:	\$1,240.00

	<p>Component Description:</p> <p>Tower mapping for an undocumented /poorly documented tower and preparation of documentation necessary for tower load study.</p> <p>Amount:</p> <p>\$1,240.00</p>
Tower Permit Package	<p>Component Description:</p> <p>\$1,175 Tower Permit Drawing Package. \$1,175 Ground & Building A&E Permit Drawing Package.</p> <p>Amount:</p> <p>\$2,350.00</p> <p>Component Description:</p> <p>\$1,175 Tower Permit Drawing Package. \$1,175 Ground & Building A&E Permit Drawing Package.</p> <p>Amount:</p> <p>\$2,350.00</p>
Minor tower reinforcement /modifications	<p>Component Description:</p> <p>\$6,250.00 Minor tower reinforcement /modifications (Labor and materials) \$1,312.50 Construction project management (Tower Modification reinforcements and facilities).</p> <p>Amount:</p> <p>\$7,562.50</p>

	<div> <div>Component Description:</div> <div>\$6,250.00 Minor tower reinforcement /modifications (Labor and materials)</div> <div>\$1,312.50 Construction project management (Tower Modification reinforcements and facilities)</div> <div>Amount:</div> <div>\$7,562.50</div> </div>
Tall Tower (greater than 500')	Information not provided.
Complex Tower (includes, for example, those with candelabras and/or stacked antennas)	<div> <div>Component Description:</div> <div>Complex Tower.</div> <div>Amount:</div> <div>\$18,562.50</div> </div> <div> <div>Component Description:</div> <div>Complex Tower.</div> <div>Amount:</div> <div>\$27,950.13</div> </div> <div> <div>Component Description:</div> <div>Complex Tower</div> <div>Amount:</div> <div>\$27,950.13</div> </div> <div> <div>Component Description:</div> <div>Complex Tower.</div> <div>Amount:</div> <div>\$18,562.50</div> </div> <div> <div>Component Description:</div> <div>Complex Tower</div> <div>Amount:</div> <div>\$13,975.07</div> </div>
Structural engineering tower load study for a documented tower with candelabra	

	Component Description:	Structural engineering tower load study for a documented tower with candelabra.
	Amount:	\$950.00
	Component Description:	Structural engineering tower load study for a documented tower with candelabra.
	Amount:	\$950.00
	Component Description:	Structural engineering tower load study for a documented tower with candelabra
	Amount:	\$950.00
	Component Description:	Structural engineering tower load study for a documented tower with candelabra
	Amount:	\$475.00
	Component Description:	Structural engineering tower load study for a documented tower with candelabra.
	Amount:	\$950.00
Minor tower reinforcement /modifications		

	Component Description:	Major tower reinforcement /modification \$8,750.00 Construction project management (Tower modification reinforcements and facilities) \$1,500.00.
	Amount:	\$10,250.00
	Component Description:	Major tower reinforcement /modification \$8,750.00 Construction project management (Tower modification reinforcements and facilities) \$1,500.00
	Amount:	\$10,250.00
	Component Description:	Major tower reinforcement /modification \$4,375.00 Construction project management (Tower modification reinforcements and facilities) \$750.00
	Amount:	\$5,125.00
Tower Permits		

Component Description:	Tower Permit Drawing Package \$2,350.00 Ground & Building A&E Permit Drawing Package \$2,350.00.
Amount:	\$4,700.00

Component Description:	Tower Permit Drawing Package \$2,350.00 Ground & Building A&E Permit Drawing Package \$2,350.00
Amount:	\$4,700.00

Component Description:	Tower Permit Drawing Package \$1,175.00 Ground & Building A&E Permit Drawing Package \$1,175.00
Amount:	\$2,350.00

Cost Information

Outside Professional Services

Where no predetermined cost estimate is available, any estimate provided will also become the predetermined cost (displayed in italics).

Description	Predetermined Cost Estimate	Estimated Cost	Estimated Cost Justification	Actual Cost	Actual Cost Justification
Outside Professional Services	\$139,860.00	\$158,545.00		\$14,334.40	
Project management of the transition	\$15,010.00	\$35,460.00	Primary: 44 hrs constr. proj. mgt + 94.8 hrs of proj. mgt for transition + RF sys test Interim: 24 hrs constr. proj. mgt + 94.8 hrs proj. mgt for transition + RF sys test Per ATC quotes \$35,460.00	\$9,634.40	N/A
Prepare and or review reimbursement form	\$2,630.00	\$5,000.00	Complex request with shared tower and need for interim facilities, also to be shared with multiple broadcasters; responding to FCC inquiries.	\$0.00	N/A
Prepare engineering section of FCC Form 2100 (main), License to Cover Application	\$1,580.00	\$1,500.00	N/A	\$0.00	N/A

Prepare request for Special Temporary Authorization	\$4,100.00	\$3,000.00	N/A	\$0.00	N/A
Comprehensive coverage verification via field study, if needed	\$84,200.00	\$80,000.00	Field study \$80,000 - vendor unknown	\$0.00	N/A
Perform engineering study for new channel assignment and antenna development	\$7,360.00	\$6,075.00	\$5,000 ATC \$1,075.00 Orion Broadcast Solutions.	\$3,575.00	N/A
Address transition timing and coordination issues w/ other stations and wireless	\$2,630.00	\$6,260.00	Address transition timing and site coordination meeting for primary and interim sites per attached ATC quotes.	\$1,125.00	N/A
Attorney Fees - Prepare and File request for Special Temporary Authorization	\$7,360.00	\$7,000.00	N/A	N/A	N/A
Attorney Fees - Negotiation of lease and other matters for shared locations	\$4,210.00	\$4,000.00	N/A	N/A	N/A
Attorney Fees - Prepare and File FCC Form 2100 (main),	\$2,365.00	\$2,250.00	N/A	N/A	N/A

License to
Cover
Application

Attorney Fees - Prepare and File FCC Form 2100 (main), Construction Permit Application	\$5,260.00	\$5,000.00	N/A	N/A	N/A
Prepare engineering section of FCC Form 2100 (main), Construction Permit Application	\$3,155.00	\$3,000.00	N/A	N/A	N/A
Sub-total	\$139,860.00	\$158,545.00	N/A	\$14,334.40	N/A
Total for all systems	\$10,436,487.61	\$5,816,343.77	N/A	\$1,378,653.94	N/A

Components

Actual Information	
Description	File Name
Project management of the transition	Component Description:
	Project management of the transition, if needed.
	Amount:
	\$2,370.00
	Component Description:
	Project management of the transition, if needed (Cost per hour per customer).
	Amount:
	\$4,740.00

Component Description:	WGBX TRX Interim: Construction Phase Services.
Amount:	\$4,894.40

Component Description:	This has been resubmitted under Other Expenses: Engineering Construction Services as requested by FCC.
Amount:	N/A

Component Description:	This has been resubmitted under Other Expenses: Engineering Construction Services as requested by FCC.
Amount:	N/A

Component Description:	This has been resubmitted under Other Expenses: Engineering Construction Services as requested by FCC.
Amount:	N/A

Component Description:	This has been resubmitted under Other Expenses: Engineering Construction Services as requested by FCC.
Amount:	N/A

Component Description:	This has been resubmitted under Other Expenses: Engineering Construction Services as requested by FCC.
Amount:	N/A

Component Description:	This has been resubmitted under Other Expenses: Engineering Construction Services as requested by FCC.
Amount:	N/A

Component Description:	This has been resubmitted under Other Expenses: Engineering Construction Services as requested by FCC.
Amount:	N/A

Component Description:	Project management of the transition, if needed (Cost per hour per customer)
Amount:	\$4,740.00

Component Description:	WGBX UHF Main: Site Survey, Outdoor Cooling Equip. Study, Demo Plan.
Amount:	\$21,312.32

	Component Description:	Project management of the transition, if needed.
	Amount:	\$2,370.00
	Component Description:	WGBX TRX Interim: Design Coordination and Construction
	Amount:	\$51,537.31
	Component Description:	WGBX UHF Main: Design Coordination and Construction.
	Amount:	\$34,237.45
	Component Description:	Project management of the transition, if needed (Cost per hour per customer)
	Amount:	\$2,370.00
	Component Description:	WGBX TRX Interim: Site Survey, Outdoor Cooling Equipment.
	Amount:	\$7,127.52
	Prepare and or review reimbursement form	Information not provided.
	Prepare engineering section of FCC Form 2100 (main), License to Cover Application	Information not provided.
	Prepare request for Special Temporary Authorization	Information not provided.
	Comprehensive coverage	

verification via field study, if needed

Component Description:

Analysis of power levels, interference analysis and studies related to FCC applications and filings.

Amount:

\$375.00

Component Description:

Analysis of power levels, interference analysis and studies related to FCC applications and filings.

Amount:

\$550.00

Component Description:

Analysis of power levels, interference analysis and studies related to FCC applications and filings.

Amount:

\$1,075.00

Component Description:

Analysis of power levels, interference analysis and studies related to FCC applications and filings.

Amount:

\$187.50

Perform engineering study for new channel assignment and antenna development

Component Description:	Perform engineering study for new channel assignment and antenna development.
Amount:	\$1,250.00

Component Description:	Perform engineering study for new channel assignment and antenna development (Cost per customer).
Amount:	\$2,500.00

Component Description:	Frequency Search - 7 GHz Duplex path.
Amount:	\$1,075.00

Component Description:	Perform engineering study for new channel assignment and antenna development.
Amount:	\$1,250.00

Component Description:	Perform engineering study for new channel assignment and antenna development (Cost per customer)
Amount:	\$2,500.00

	<p>Component Description:</p> <p>Perform engineering study for new channel assignment and antenna development (Cost per customer)</p> <p>Amount:</p> <p>\$1,250.00</p>
Address transition timing and coordination issues w/ other stations and wireless	<p>Component Description:</p> <p>Address transition timing and coordination issues with other stations and wireless.</p> <p>Amount:</p> <p>\$500.00</p> <p>Component Description:</p> <p>Address transition timing and coordination issues with other stations and wireless (Cost per customer).</p> <p>Amount:</p> <p>\$1,250.00</p> <p>Component Description:</p> <p>Analysis of power levels, interference analysis and studies related to FCC applications and filings.</p> <p>Amount:</p> <p>\$550.00</p>

Component Description:	Analysis of power levels, interference analysis and studies related to FCC applications and filings.
Amount:	\$1,075.00

Component Description:	Analysis of power levels, interference analysis and studies related to FCC applications and filings.
Amount:	\$187.50

Component Description:	Analysis of power levels, interference analysis and studies related to FCC applications and filings.
Amount:	\$375.00

Component Description:	Address transition timing and coordination issues with other stations and wireless (Cost per customer)
Amount:	\$625.00

	Component Description:	Address transition timing and coordination issues with other stations and wireless.
	Amount:	\$500.00
	Component Description:	Address transition timing and coordination issues with other stations and wireless (Cost per customer)
	Amount:	\$1,250.00
Attorney Fees - Prepare and File request for Special Temporary Authorization	Information not provided.	
Attorney Fees - Negotiation of lease and other matters for shared locations	Information not provided.	
Attorney Fees -Prepare and File FCC Form 2100 (main), License to Cover Application	Information not provided.	
Attorney Fees - Prepare and File FCC Form 2100 (main), Construction Permit Application	Information not provided.	
Prepare engineering section of FCC Form 2100 (main), Construction Permit Application	Information not provided.	

Cost Information

Other Expenses

Where no predetermined cost estimate is available, any estimate provided will also become the predetermined cost (displayed in italics).

Description	Predetermined Cost Estimate	Estimated Cost	Estimated Cost Justification	Actual Cost	Actual Cost Justification
Other Expenses	\$280,620.00	\$286,088.00		\$163,350.86	
Engineering Construction Services	<i>\$193,000.00</i>	\$193,000.00	EJC International Services - professional engineering services to replace existing main transmitter at 350 Cedar Street and provide a new aux transmitter at 140 Cabot Street.	\$157,240.86	N/A
Site coordination meetings	<i>\$1,760.00</i>	\$1,760.00	N/A	\$500.00	N/A
RF System Commission	<i>\$8,000.00</i>	\$8,000.00	Includes primary and interim sites per ATC quotes.	\$2,000.00	N/A
Pre planning survey and engineering	<i>\$5,000.00</i>	\$5,000.00	N/A	\$0.00	N/A
MVPD Notification of Channel Change	<i>\$8,430.00</i>	\$8,430.00	DTV Notification - MVPD Notification Services:	\$0.00	N/A

			Notification of Cable and Satellite MVPD Providers of new RF Channel and Transport Stream Parameters on Repack Channel. x 2 due to Phase Change.		
Develop and air announcement of upcoming channel change	\$30,000.00	\$30,000.00	N/A	\$0.00	N/A
Equipment Storage	\$5,000.00	\$5,000.00	N/A	\$900.00	N/A
Equipment Delivery and Handling Charges	\$8,500.00	\$8,500.00	Includes primary and interim sites per ATC quotes.	\$2,125.00	N/A
FCC Filing Fees - Special Temporary Authorization request	\$195.00	\$0.00	N/A	N/A	N/A
FCC Filing Fees - Form 2100 license to cover application	\$335.00	\$0.00	N/A	N/A	N/A
DTV Medical Facility Notification	\$11,550.00	\$18,658.00	DTV Notification Service: Notification of Medical Facilities - Transmitter	\$0.00	N/A

			Medical Facility Notification. x 2 due to Phase Change		
Disposal Costs (for equipment and other waste, net of any salvage value)	\$5,000.00	\$5,000.00	N/A	\$0.00	N/A
Non-zoning permits	\$1,500.00	\$1,500.00	Includes primary and interim sites per ATC quotes.	\$0.00	N/A
FCC Filing Fees - Form 2100 minor change CP application	\$1,110.00	\$0.00	N/A	\$0.00	N/A
Local Zoning	\$1,240.00	\$1,240.00	Public hearing for primary and interim sites per ATC quotes. ATC Public Hearing \$400	\$585.00	N/A
Sub-total	\$280,620.00	\$286,088.00	N/A	\$163,350.86	N/A
Total for all systems	\$10,436,487.61	\$5,816,343.77	N/A	\$1,378,653.94	N/A

Components

Actual Information	
Description	File Name
Engineering Construction Services	

Component Description:	WGBX UHF Interim: Site Survey and Lidar Scanning, Outdoor Cooling Equipment Study, Design Coordination and Construction, Construction Phase Services, Project Expenses.
Amount:	\$4,894.40

Component Description:	WGBX UHF Interim: Site Survey and Lidar Scanning, Outdoor Cooling Equipment Study, Design Coordination and Construction, Construction Phase Services, Project Expenses.
Amount:	\$4,894.40

Component Description:	WGBX UHF Main: Site Survey and Lidar Scanning, Outdoor Cooling Equipment Study, Demo Plan, Design Coordination and Construction, Project Expenses.
Amount:	\$34,237.45

	Component Description:	WGBX UHF Main: Site Survey and Lidar Scanning, Outdoor Cooling Equipment Study, Demo Plan, Design Coordination and Construction, Project Expenses.
	Amount:	\$33,237.46
	Component Description:	WGBX UHF Main: Site Survey and Lidar Scanning, Outdoor Cooling Equipment Study, Demo Plan, Project Expenses.
	Amount:	\$21,312.32
	Component Description:	WGBX UHF Interim: Site Survey and Lidar Scanning, Outdoor Cooling Equipment Study, Project Expenses.
	Amount:	\$7,127.52
	Component Description:	WGBX UHF Interim: Site Survey and Lidar Scanning, Outdoor Cooling Equipment Study, Design Coordination and Construction, Project Expenses.
	Amount:	\$51,537.31
Site coordination meetings		

	Component Description: Site Coordination Meeting. Amount: \$500.00
	Component Description: Site Coordination Meeting. Amount: \$500.00
RF System Commission	Component Description: RF System Test. Amount: \$1,375.00 Component Description: RF System Test. Amount: \$1,250.00 Component Description: RF System Test. Amount: \$1,375.00 Component Description: RF System Test Amount: \$625.00 Component Description: RF System Test Amount: \$1,250.00
Pre planning survey and engineering	Information not provided.
MVPD Notification of Channel Change	Component Description: Notification of Cable and Satellite MVPD Providers of new RF Channel and Transport Stream Parameters on Repack Channel. Amount: \$4,215.00
Develop and air	Information not provided.

announcement of upcoming channel change													
Equipment Storage	<table> <tr> <td>Component Description:</td><td>Site Security Company during construction for theft prevention and vandalism.</td></tr> <tr> <td>Amount:</td><td>\$1,800.00</td></tr> <tr> <td>Component Description:</td><td>Site Security Company during construction for theft prevention and vandalism.</td></tr> <tr> <td>Amount:</td><td>\$900.00</td></tr> <tr> <td>Component Description:</td><td>Site Security Company during construction for theft prevention and vandalism.</td></tr> <tr> <td>Amount:</td><td>\$1,800.00</td></tr> </table>	Component Description:	Site Security Company during construction for theft prevention and vandalism.	Amount:	\$1,800.00	Component Description:	Site Security Company during construction for theft prevention and vandalism.	Amount:	\$900.00	Component Description:	Site Security Company during construction for theft prevention and vandalism.	Amount:	\$1,800.00
Component Description:	Site Security Company during construction for theft prevention and vandalism.												
Amount:	\$1,800.00												
Component Description:	Site Security Company during construction for theft prevention and vandalism.												
Amount:	\$900.00												
Component Description:	Site Security Company during construction for theft prevention and vandalism.												
Amount:	\$1,800.00												
Equipment Delivery and Handling Charges	<table> <tr> <td>Component Description:</td><td>Equipment Delivery and Handling Charges.</td></tr> <tr> <td>Amount:</td><td>\$1,375.00</td></tr> <tr> <td>Component Description:</td><td>Equipment Delivery and Handling Charges (Cost per customer).</td></tr> <tr> <td>Amount:</td><td>\$1,500.00</td></tr> <tr> <td>Component Description:</td><td>Equipment Delivery and Handling Charges.</td></tr> <tr> <td>Amount:</td><td>\$1,375.00</td></tr> </table>	Component Description:	Equipment Delivery and Handling Charges.	Amount:	\$1,375.00	Component Description:	Equipment Delivery and Handling Charges (Cost per customer).	Amount:	\$1,500.00	Component Description:	Equipment Delivery and Handling Charges.	Amount:	\$1,375.00
Component Description:	Equipment Delivery and Handling Charges.												
Amount:	\$1,375.00												
Component Description:	Equipment Delivery and Handling Charges (Cost per customer).												
Amount:	\$1,500.00												
Component Description:	Equipment Delivery and Handling Charges.												
Amount:	\$1,375.00												

	<div> <div>Component Description:</div> <div>Equipment Delivery and Handling Charges (Cost per customer)</div> </div> <div> <div>Amount:</div> <div>\$1,500.00</div> </div>
	<div> <div>Component Description:</div> <div>Equipment Delivery and Handling Charges (Cost per customer)</div> </div> <div> <div>Amount:</div> <div>\$750.00</div> </div>
FCC Filing Fees - Special Temporary Authorization request	Information not provided.
FCC Filing Fees - Form 2100 license to cover application	Information not provided.
DTV Medical Facility Notification	<div> <div>Component Description:</div> <div>Transmitter Medical Facility Notification.</div> </div> <div> <div>Amount:</div> <div>\$9,329.00</div> </div>
Disposal Costs (for equipment and other waste, net of any salvage value)	Information not provided.
Non-zoning permits	Information not provided.
FCC Filing Fees - Form 2100 minor change CP application	Information not provided.
Local Zoning	

Component Description:	\$187.50 Obtain building permits from local zoning authorities. \$110.00 Public Hearing.
Amount:	\$297.50

Component Description:	Obtain building permits from local zoning authorities. \$375.00 Public Hearing. \$200.00.
Amount:	\$575.00

Component Description:	Obtain building permits from local zoning authorities. \$187.50 Public Hearing. \$100
Amount:	\$287.50

Component Description:	Obtain building permits from local zoning authorities. \$375.00 Public Hearing. \$200.00
Amount:	\$575.00

Component Description:	\$187.50 Obtain building permits from local zoning authorities. \$110.00 Public Hearing.
Amount:	\$297.50

Cost Information	Grand Total			
		Predetermined Cost Estimate	Estimated Cost	Actual Cost
	Total for all systems	\$10,436,487.61	\$5,816,343.77	\$1,378,653.94

Reimbursement Status	Question	Response
	The facility has ceased operating on its pre-auction channel.	Yes
	Construction of final facilities or all necessary modifications are complete.	No
	All receipts for reimbursement have been submitted no further costs are expected to be incurred. Note this will lock the Form 399 from further editing and begin close-out procedures with the Fund Administrator.	No

Certification	Section	Question	Response
	Submission of Estimated Expenses Statements	<p>WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND /OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a) (1), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503), AND ANY FALSE STATEMENTS COULD SUBJECT THIS ENTITY TO LIABILITY UNDER THE FALSE CLAIMS ACT.</p>	
		<ol style="list-style-type: none"> 1. The Authorized Person signing below certifies that he /she is authorized to submit this TV Broadcaster Relocation Fund Reimbursement Form on behalf of the above-named entity. 2. The above-named entity acknowledges that all certifications and attached documentation are considered material representations. 3. The above-named entity acknowledges the submission of the information herein creates no obligation on the part of the government to pay any amount. 4. The above-named entity certifies that the equipment and services paid for with money from the TV Broadcaster Relocation Fund are necessary to change channels (broadcasters) or to continue to carry the 	

signal of a
broadcaster that
changes channels
(MVPD).

5. The above-named entity certifies that all payments from the TV Broadcaster Relocation Fund (Fund) received by the entity listed on this form will be used only for expenses that are eligible for reimbursement from the Fund.
6. The above-named entity certifies that it will maintain and provide to the Commission detailed records, including receipts, of all costs eligible for reimbursement actually incurred.
7. The above-named entity acknowledges that overpayments or payments in error must be promptly refunded to the Commission.
8. The above-named entity certifies that it is in full compliance with all statutes, rules, regulations and governmental requirements for which compliance is a pre-requisite for obtaining the payments herein requested.

I declare, under penalty of perjury, that I am an authorized representative of the above-named applicant for the Authorization(s) specified above.

**Emeric
Feldmar**
*Director of
Engineering*

09/23/2019

Certification	Section	Question	Response
	Submission of Actual Cost Documentation Statements	<p>WILLFUL FALSE, FRAUDULENT, OR FICTITIOUS STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND /OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a) (1), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503), AND ANY FALSE AND/OR FRAUDULENT STATEMENTS COULD SUBJECT THIS ENTITY TO LIABILITY UNDER THE FALSE CLAIMS ACT (U.S. CODE, TITLE 31, SECTIONS 3729-3733).</p>	
		<ol style="list-style-type: none"> 1. The Authorized Person signing below certifies and represents that he /she is authorized to submit this TV Broadcaster Relocation Fund Reimbursement Form on behalf of the above-named entity. 2. The above-named entity certifies that the statements in this form and attached documentation are true, complete, and correct. 3. The above-named entity acknowledges that all certifications and attached documentation are considered material representations. 4. The above-named entity acknowledges the submission of the information herein 	

creates no obligation on the part of the government to pay any amount.

5. The above-named entity certifies that the equipment and services paid for with money from the TV Broadcaster Relocation Fund are necessary to change channels (full power and Class A stations) and/or otherwise modify a television station's facility as a result of the spectrum repack (LPTV/TV Translator stations); or to minimize service disruption resulting from a repacked television station (FM stations); or to continue to carry the signal of a broadcaster that changes channels (MVPD) .
6. The above-named entity certifies that all payments from the TV Broadcaster Relocation Fund (Fund) received by the entity listed on this form will be used only for expenses that are eligible for reimbursement from the Fund.
7. The above-named entity certifies that the cost information /documents submitted reflect costs actually incurred.
8. The above-named entity acknowledges that overpayments or payments in error

<p>must be promptly refunded to the Commission.</p> <p>9. The above-named entity certifies that it is in full compliance with all statutes, rules, regulations and governmental requirements for which compliance is a prerequisite for obtaining the payments herein requested.</p>	
<p>I declare, under penalty of perjury, that I am an authorized representative of the above-named applicant for the Authorization(s) specified above.</p>	<p>Emeric Feldmar <i>Director of Engineering</i></p> <p>09/23/2019</p>

Attachments