



(REFERENCE COPY - Not for submission)

# FCC Form 399: Reimbursement Request

Facility **66170** | Service: **DTV** | Call **KTIV** | Channel: **14 (UHF)** |  
ID: | Sign:  
File **0000027507**  
Number:  
FRN: **0025026022** | Date **08/01**  
Submitted: **/2019**

## Applicant Information

### Applicant Name, Type, and Contact Information

Applicant	Address	Phone	Email	Applicant Type
<b>KTIV License, LLC</b> Doing Business As: KTIV License, LLC	Brady Dreasler PO Box 909 Quincy, IL 62306 United States	+1 (217) 223-5100	bdreasler@quincymedia. com	Limited Liability Company

## 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
<b>Tony zumMallen</b> <i>QCommunications</i>	Tony zumMallen 705B SE Melody LN #314 Lees Summit, MO 64063 United States	+1 (816) 729- 1177	tony@qcom1. com

**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	The transition from channel 41 to channel 14 requires shared interim systems with KMEG and KPTH through a combiner. KTIV will require a new antenna, line and transmitter to complete the transition.

**Transmitters**

Section	Question	Response
<b>Transmitter Related Expenses</b>	Do you have transmitter related expenses?	Yes

**Primary  
Transmitter**

**Existing Transmitter Information**

Section	Question	Response
<b>Existing Transmitter Description</b>	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
<b>Existing Transmitter Manufacturer and Type</b>	Manufacturer	
	Model	PowerCD
	Year	2006
	Type	Inductive Output Tube
	IOT Power Type	Two
	Power Capacity	60 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	ULXTE-100
	Transmitter Type	Solid State
	Solid State Cooling	Liquid Cooled
	Solid State Power capacity	56.7 kW
	Justification for New Transmitter	IOT Transmitter is not tunable per the manufacturer. Special Case- Channel 14 requirements. Per engineering consultant new TPO required is 56.7kw.

**Primary 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	2 inches
	Length	500.0 feet
	Other Electrical Service	No
	Description	N/A
<b>HVAC Service</b>	Does the replacement transmitter require HVAC Service?	Yes
	Type	Cooling Only
	Size	25 tons
	Other Size	N/A
<b>Transmitter Building Addition/Modification or Leasehold Improvement</b>	Does the Transmitter Building require an addition, modification, other leasehold improvement?	No
	Size	N/A
<b>Channel 14 Costs</b>	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	10

**Primary Transmitter**      **Other Transmitter Cost Not Listed**

<b>Name</b>	<b>Description</b>
<b>Transmitter Site Preparation</b>	Site prep for installation of the interim and main transmitters and RF components not part of Installation SOW.
<b>Channel 14 remediation</b>	After working with the NAB and our consulting engineer a LM remediation budget needs to be added to cover these estimated costs of operating in CH 14.
<b>ELECTRICAL EQ INSTALLATION</b>	INT AND MAIN TX REQUIRE NEW ELECTRICAL SYSTEMS INSTALLATIONS

<b>RF Accessories-other</b>	RF Accessories on Gates Q-62047 for transmitters not captured on existing line items
<b>Sales Tax - Non Exempt -IA</b>	KTIV is not tax exempt from Iowa Sales tax - Gates calculates
<b>Securirty - Site</b>	This site requires security once the new transmission line and equipment arrive on site to be installed. Estimated length of 4-6 weeks.
<b>Site Survey - TX</b>	Site survey and report are required to be performed before the new transmitter and components installation plan can be finalized.
<b>Freight - MFG</b>	Freight- from MFG to staging area or station
<b>Disconnect existing Transmitter</b>	Disconnect transmitter and components from existing configuration and move within building to make way for new facilities.
<b>Transmitter - Training</b>	Transmitter training - offsite - 1 week in duration at mfg site.

**Interim  
Transmitter**

**New Transmitter Costs**

Section	Question	Response
<b>New Transmitter</b>	Use	Interim
	Description of Use	N/A
	Change Type	Purchase
	Manufacturer	
	Model	ULXTE-30
	Transmitter Type	Solid State
	Solid State Cooling	Liquid Cooled
	Solid State Power capacity	20 kW
	Justification for New Transmitter	Interim facility is required to avoid prolonged period of station silence during transition, and station currently has no aux facility to use for interim operation. Extended silent period during transition to new channel is unreasonable.

**Interim  
Transmitter**

**Other Transmitter Costs**

Section	Question	Response
<b>Electrical Service</b>	Service Entrance (3 phases 800A 208V)	No

	Switchgear (industrial 800 amp)	Yes
	Transformer (480V)	No
	Power	N/A
	Rigid Conduit and Wiring	Yes
	Size	2 inches
	Length	500.0 feet
	Other Electrical Service	No
	Description	N/A
<b>HVAC Service</b>	Does the replacement transmitter require HVAC Service?	Yes
	Type	Cooling Only
	Size	25 tons
	Other Size	N/A
<b>Transmitter Building Addition/Modification or Leasehold Improvement</b>	Does the Transmitter Building require an addition, modification, other leasehold improvement?	No
	Size	N/A
<b>Channel 14 Costs</b>	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
<b>Inside RF System</b>	Is an additional interior RF system required to support this interim transmitter?	Yes

**Interim Transmitter**

**Other Transmitter Cost Not Listed**

Name		Description
Sales Tax est		IA sales tax est per mfg



<b>Transmitter Site Preparation</b>	Site prep for installation of the interim and main transmitters and RF components not part of Installation SOW.
<b>Freight - TX eq</b>	Freight from the mfg to stations TX site.

**Antennas**

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

**Primary  
Antenna**

**Existing Antenna Information**

Section	Question	Response
<b>Existing Antenna Description</b>	Type of change	Purchase New
	Antenna Use	Primary (Main)
	Description of Use	N/A
	Ownership	Owned
	Owner	N/A
	Site	N/A
	Is the existing antenna shared with another station or stations?	No
	Is the existing antenna directional?	No
	Is antenna in operating condition?	Yes
	Is antenna located on or in close proximity to an antenna farm?	Yes
<b>Existing Antenna Manufacturer and Type</b>	Class	Full Power
	Mounting	Top Mount
	Antenna position in stack	Not in Stack
	Polarization	Horizontal
	Type	Slotted Coaxial
	Number of Stations Supported	N/A
	Number of Panels	N/A
	Design power capacity in use	N/A
	Lower Limit	N/A
	Upper Limit	N/A
	Other Antenna Type	N/A
	ERP: (Effective Radiated Power) .....	873.0 kW

Manufacturer	
Model	TFU-30JTH-R-04
Year	2006

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**Primary  
Antenna**

**New Antenna Costs**

Section	Question	Response
<b>New Antenna Description</b>	Use	Primary (Main)
	Description of Use	N/A
	Change Type	Purchase New
	Is this a request for upgraded equipment?	Yes
	Ownership	Owned
	Owner	N/A
	Is antenna shared?	No
	Is antenna directional?	Yes
	Will antenna be located on or in close proximity to an antenna farm?	Yes
<b>New Antenna Manufacturer and Types</b>	Class	Full Power
	Mounting	Top Mount
	Antenna position in stack	Not in Stack
	Polarization	Elliptical
	Type	Broadband Panel
	Number of Stations Supported	1
	Number of Panels/Bays	24
	Lower Limit	470.00 MHz
	Upper Limit	698.00 MHz
	Design power capacity in use	100.0 %
	Other Antenna Type	N/A
	ERP: (Effective Radiated Power)	873.0 kW
	Manufacturer	
Model	TFU-31ETT	

Year	2017
Justification for New Antenna	Required to operate on the new channel assignment. Ch14 special case. FAA height restrictions. E-POL has been added and that will be treated as an upgrade which is not reimbursable. \$240,000 is verified.

**Primary Antenna**

**Other Antenna Costs**

Section	Question	Response
<b>Combiner for Shared Antenna</b>	Do you need a Combiner for a Shared Antenna?	No
	Type	
	Number of channels supported	N/A
	Frequencies of channels supported	N/A
	Frequency	N/A
	Do you need a combiner output splitter /switcher for dual feed lines?	N/A
<b>Elbow Complex</b>	Do you require the separate purchase of the Elbow Complex?	Yes
	Broadband or Single Channel?	Broadband
	Feed Line Size	6 1/8 inches inches

<b>Side Mount Brackets</b>	Do you require the separate purchase of side mount brackets for a high power antenna?	No
<b>Pattern Scatter Analysis</b>	Do you require separate purchase of pattern scatter analysis for a side mount high or medium power antenna?	No
<b>Sweep Test</b>	Do you require the sweep testing of transmission line and antenna?	Yes

**Primary  
Antenna**

**Other Antenna Cost Not Listed**

<b>Name</b>	<b>Description</b>
<b>SWEEP NEW ANTENNA AND LINE</b>	SWEEP NEW ANTENNA AND LINE
<b>FREIGHT EQUIPMENT</b>	FREIGHT FOR THE ANTENNA AND LINE FROM MFG TO STORAGE OR STAGING AREA.

**Interim  
Antenna**

**New Antenna Costs**

<b>Section</b>	<b>Question</b>	<b>Response</b>
<b>New Antenna Description</b>	Use	Interim
	Description of Use	N/A
	Change Type	Purchase New
	Ownership	Owned
	Owner	N/A
	Is antenna shared?	Yes
	Is antenna directional?	Yes
	Will antenna be located on or in close proximity to an antenna farm?	Yes
<b>New Antenna Manufacturer and Type</b>	Class	Full Power
	Mounting	Side Mount
	Antenna position in stack	Not in Stack
	Polarization	Elliptical
	Type	Broadband Slot
	Number of Stations Supported	3
	Number of Panels/Bays	24
	Lower Limit	470.00 MHz
	Upper Limit	698.00 MHz
	Design power capacity in use	50.0 %
	Other Antenna Type	N/A
	ERP: (Effective Radiated Power)	300.0 kW
	Manufacturer	
	Model	TFU-24WB- 1-R
	Year	2017



Justification for New Antenna	Interim facility is required to avoid prolonged period of station silence during transition, and station currently has no aux facility to use for interim operation. Shared with KPTH and KMEG. Paid from the KPTH deal.
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**Interim Antenna**

**Other Antenna Costs**

Section	Question	Response
<b>Combiner for Shared Antenna</b>	Do you need a Combiner for a Shared Antenna?	Yes
	Type	New
	Number of channels supported	3
	Frequencies of channels supported	RF channel
	Frequency	N/A
	Do you need a combiner output splitter /switcher for dual feed lines?	No
<b>Elbow Complex</b>	Do you require the separate purchase of the Elbow Complex?	Yes
	Broadband or Single Channel?	B
	Feed Line Size	6 1/8 inches

<b>Side Mount Brackets</b>	Do you require the separate purchase of side mount brackets for an antenna?	No
<b>Pattern Scatter Analysis</b>	Do you require separate purchase of pattern scatter analysis for a side mount high or medium power antenna?	No
<b>Sweep Test</b>	Do you require the sweep testing of transmission line and antenna?	Yes

**Enter a list of RF channel numbers.**

RF Channel Number
30
32
14

**Interim  
Antenna**

**Other Antenna Cost Not Listed**

Name	Description
<b>SWEEP NEW LINE AND ANTENNA</b>	<b>SWEEP NEW ANTENNA AND LINE</b>

**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
<b>Existing Transmission Line Description</b>	Type of change	Purchase New
	Use	Primary (Main)
	Description of Use	N/A
	Ownership	Owned
	Owner	N/A
	Site	N/A
	Is the existing transmission line shared with another station or stations?	No
	Is Transmission Line in operating condition?	Yes
<b>Existing Transmission Line Manufacturer and Type</b>	Manufacturer	
	Type	Rigid
	Diameter	7 3/16 inches
	Other Diameter	N/A
	Segment Length	19 1/2 inches
	Other Segment Length	N/A
	Number of parallel runs	1
	Length	2298 feet per run

**Primary  
Transmission  
Line**

**New Transmission Line**

Section	Question	Response
<b>New Transmission Line Costs</b>	Use	Primary (Main)
	Description of Use	N/A
	Change Type	Purchase New
	Is this a request for upgraded equipment?	No
	Type	Rigid
	Diameter	7 3/16 inches
	Other Diameter	N/A
	Segment Length	20 inches
	Other Segment Length	N/A
	Number of parallel runs	1
	Length	2140 feet per run
	Justification for New Transmission Line	Required to make the channel assignment relocation from CH41 to CH14

**Primary  
Transmission  
Line**

**Other Transmission Line Expenses Not Listed**

Name	Description
<b>Disconnect existing Interior RF components</b>	Disconnect interior RF transmission line and filters from existing configuration and move within the building to make way for new facilities.

**Tower Equipment And Rigging Costs**

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

**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?	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?	No
Existing Tower Structure Registration	Do you have a tower registration number?	Yes
	ASR Number	1057963
Coordinates (NAD83 (North American Datum of 1983))	Latitude (NAD83)	42° 35' 12.0" N-
	Longitude (NAD83)	096° 13' 19.0" W-
	Overall Structure Height	1987.84 feet
	Support Structure Height	1847.09 feet
	Ground Elevation Above Mean Sea Level (AMSL)	1332.99 feet

Structure Type	TOWER - Free Standing or Guyed Structure
Tower Owner	Heartland Tower Company, L.L.C.
Date Constructed	02/22/2007

**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
77451	KPTH	DTV
39665	KMEG	DTV

**Primary Tower**

**Tower Modification Costs**

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

**Primary Tower**

**Tower Rigging Costs**

Section	Question	Response
<b>Tower Rigging Costs</b>	Complex Tower	Candelabra
<b>Helicopter Services Required</b>	Are helicopter services required?	No

**Primary  
Tower**

**Other Tower Expenses Not Listed**

Information not provided.



**Outside  
Professional  
Services  
Costs**

Section	Question	Response
<p><b>Outside Project Management Services</b></p>	<p>Do you require outside project management services?</p>	<p>Yes</p>
	<p>Number of Hours</p>	<p>1405</p>
	<p>Explanation</p>	<p>Scope &amp; significance of project (QMI has multiple stations repacked) require outside management services to augment existing internal personnel to assist turnkey management of and ensure timely and safe execution of channel relocation.</p>
<p><b>Outside RF consulting Engineering Services</b></p>	<p>Perform engineering study for new channel assignment and antenna development</p>	<p>Yes</p>
	<p>Prepare engineering section of Form FCC Construction Permit Application</p>	<p>Yes</p>
	<p>For Auxiliary Facility</p>	<p>No</p>
	<p>For Main Facility</p>	<p>Yes</p>
	<p>Prepare engineering section of Form FCC License to Cover Application</p>	<p>Yes</p>
	<p>For Auxiliary Facility</p>	<p>No</p>
	<p>For Main Facility</p>	<p>Yes</p>

	Prepare request for Special Temporary Authority	Yes
	Quantity	4
	Do you have Distributed Transmission System engineering services?	N/A
	Critical Facility	N/A
	Terrain-Shielded Facility	N/A
<b>Attorney and Other Outside Consulting Services</b>	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	4
	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	
<b>RF Field Engineering Services</b>	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  
Professional  
Services  
Costs**

**Other Professional Services Expenses Not Listed**

Name	Description
<b>General Repack Legal Services</b>	See attached memo-QMI Repack Invoice Memo for Shared Legal Expenses (Matter 104411 00054) for Form 399
<b>Quarterly reporting</b>	Preparation and submittal of the FCC required quarterly report 387 by PM and attorney.
<b>Vendor Travel Expenses</b>	Reimbursable Vendor Travel expenses for working in the field on behalf of the station for the Repack project - see quote for estimated expenses.
<b>Plumbing work for TX cooling systems</b>	New TX Interim and Main required new plumbing systems to be installed

**Other Expenses**

Section	Question	Response
<b>AM Pattern Disturbance</b>	Is an Impact Study needed?	No
	Is Remediation needed?	No
<b>Facility Expenses</b>	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
<b>Permit and Filing Costs</b>	Local Zoning	No
	Non-zoning permits	No
	BLM or NFS Coordination	No
	FCC Construction Permit Minor Change	No
	FCC License to Cover Application	Yes
	FCC Special Temporary Authority Application	Yes
<b>Other Miscellaneous Expenses</b>	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
<b>SITE SAFETY AND CLEARING PREP</b>	CLEAR THE CONTROLLED AREA AROUND THE TOWER OF BRUSH AND APPLY INSECTICIDE TO PREVENT ACCIDENTS AND PROMOTE A SAFE SITE AND MINIMIZING RISK.

**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 Justification
<b>Interim Transmitter ULXTE-30</b>	<b>\$1,029,337.90</b>	<b>\$980,937.90</b>		<b>\$632,210.55</b>	
Freight - TX eq	<i>\$8,400.00</i>	\$8,400.00	est cost to have the interim transmitter delivered from the mfg to transmitter site. per QTE Q-64042	\$7,700.00	
Switchgear - industrial 800 amp	\$38,200.00	\$36,300.00	N/A	\$4,997.49	
2" Rigid Conduit and Wiring (Cost per foot)	\$13,000.00	\$12,500.00	N/A	N/A	
25 Ton system	\$91,500.00	\$87,000.00	N/A	N/A	
Transmitter Site Preparation	<i>\$5,000.00</i>	\$5,000.00	Site prep for installation of the interim and main transmitters and RF components not part of Installation SOW.	\$5,000.00	
UHF - Liquid Cooled Solid State Transmitter 14.2 - 20 kW	\$684,000.00	\$650,000.00	N/A	\$554,212.02	
UHF inside RF system including switching	\$147,500.00	\$140,000.00	N/A	\$32,765.43	

Sales Tax est	<b><i>\$41,737.90</i></b>	\$41,737.90	as determined by GatesAir in the invoice	\$27,535.61
<b>Primary Transmitter ULXTE-100</b>	<b>\$2,685,249.08</b>	<b>\$2,205,523.92</b>		<b>\$1,714,229.04</b>
Transmitter - Training	<b><i>\$3,300.00</i></b>	\$3,300.00	Transmitter training - offsite - 1 week in duration at mfg site.	N/A
Disconnect existing Transmitter	<b><i>\$25,000.00</i></b>	\$25,000.00	Disconnect transmitter and components from existing configuration and move within building to make way for new facilities.	\$23,500.00
Freight - MFG	<b><i>\$17,300.00</i></b>	\$17,300.00	Freight- from MFG to staging area or station	\$0.00
Site Survey - TX	<b><i>\$25,000.00</i></b>	\$25,000.00	Site survey and report are required to be performed before the new transmitter and components installation plan can be finalized.	\$18,500.00
Security - Site	<b><i>\$17,500.00</i></b>	\$17,500.00	This site requires security once the new transmission line and equipment arrive on site to be installed. Estimated length of 4-6 weeks.	\$15,654.10
Sales Tax - Non Exempt -IA	<b><i>\$133,564.18</i></b>	\$133,564.18	KTIV is not exempt from IOWA state sales tax. Gates calculates sales tax for invoices. see Q62047 and INV TE10004376	\$101,177.09

RF Accessories- other	<b><i>\$89,324.90</i></b>	\$89,324.90	RF Accessories per GatesAir Q-62047 Items C. RF Accessories. Captures required equipment not identified in existing 399 line items. - USE THE LINE C FROM THE ULXTE -72 QUOTE Q-74824	\$89,324.90
ELECTRICAL EQ INSTALLATION	<b><i>\$99,000.00</i></b>	\$99,000.00	ELECTRICAL MODIFICATIONS FOR NEW MAIN AND INTERIM TX. USED THREE FCC LINE ITEMS - OTHER- ELECTRICAL AND MAIN TRANSMITTER - RF AND MAIN TX ELECTRICAL TOTALING 161592.36	\$91,975.85
Channel 14 remediation	<b><i>\$25,000.00</i></b>	\$25,000.00	Reduced 10-12-2017 per FCC Verified letter from \$500k to \$25k - to be increased as actual costs are required for remediation.	\$10,000.00
Transmitter Site Preparation	<b><i>\$10,500.00</i></b>	\$10,500.00	Site prep for installation of the interim and main transmitters and RF components not part of Installation SOW.	\$10,500.00



Channel 14 Mask Filter	\$189,500.00	\$0.00	per 5-29-19-FCC email recommendation we zeroed out the Mask filer and moved the CH14 Mask Filter dollars to the allotment to the TX line item.	N/A	
UHF - Liquid Cooled Solid State Transmitter 52 - 61 kW	\$1,788,000.00	\$1,458,394.10	6-3-AMENDED est PER 5-29 email to equal TX plus CH14 Mask Filter Validation. \$1,223,584.00 - TX \$234,809.90 - CH14 Mask Filter. zeroed out MK line	\$1,312,291.83	
RF Consulting Engineer	\$5,260.00	\$5,000.00	N/A	\$0.00	
Service entrance 3 phase/800 amp /208 volt	\$14,400.00	\$13,700.00	N/A	N/A	
Switchgear - industrial 800 amp	\$38,200.00	\$83,440.74	PER Q-62047 - THE RF ACCESSORIES QUOTE LINE C IS MORE THAN THE PREDETERMINED SWITCHGEAR EST COST.	\$0.00	Q-6: ACCE - mov It Acc othe kno remc so we the t in S
Transformer 3 phase/480v - 300 KVA	\$36,800.00	\$40,000.00	GATES EQ QUOTE AND LOCAL ELECTRIC INSTALL AND EQUIPMENT QUOTE	\$39,705.62	
2" Rigid Conduit and Wiring (Cost per foot)	\$13,000.00	\$12,500.00	N/A	\$1,599.65	

25 Ton system	\$91,500.00	\$87,000.00	We reviewed the transmitter transition plans and with an additional 25 tons of HVAC installed in the new section of the transmitter room it is estimated that the required environmental conditions to operate the new transmitter config can be obtained.	N/A
Additional field engineering time, 10-30 days	\$63,100.00	\$60,000.00	N/A	N/A
<b>Sub-total</b>	\$3,714,586.98	\$3,186,461.82	N/A	\$2,346,439.59
<b>Total for all systems</b>	\$6,259,766.59	\$5,575,956.43	N/A	\$3,499,384.36

### Components

Actual Information	
Description	File Name
Freight - TX eq	<p><b>Component Description:</b> KTIV-GATES-INT INV TE10004337-3 - FREIGHT</p> <p><b>Amount:</b> \$7,700.00</p>

<p>Switchgear - industrial 800 amp</p>	<p><b>Component Description:</b> KTIV-GATES INT TX INV TE10004377-3 -line D Quote Q-62042-SWITCHGEAR</p> <p><b>Amount:</b> \$1,665.83</p> <p><b>Component Description:</b> Gates - INT TX- KTIV - ELEC line D see Quote Q-62042 -2nd invoice uploaded</p> <p><b>Amount:</b> \$1,665.83</p> <p><b>Component Description:</b> Gates - INT TX- KTIV - ELEC line D see inv and quote Q-62042</p> <p><b>Amount:</b> \$1,665.83</p>
<p>2" Rigid Conduit and Wiring (Cost per foot)</p>	<p>Information not provided.</p>
<p>25 Ton system</p>	<p>Information not provided.</p>
<p>Transmitter Site Preparation</p>	<p><b>Component Description:</b> KTIV-PREP- INTERIM - INV- QC18-057</p> <p><b>Amount:</b> \$5,000.00</p>

UHF - Liquid Cooled Solid  
State Transmitter 14.2 -  
20 kW

**Component Description:**

KTIV-Gates-INT TX  
- BALANCE INV  
TE10004377-3-  
LINES A, B and E -  
of quote Q-62042

**Amount:**

\$181,883.52

**Component Description:**

Gates-INT TX -  
KTIV - 1/3 dep lines  
A, B and E - see  
revised INV and Q-  
62042

**Amount:**

\$186,164.25

**Component Description:**

Gates-INT TX -  
KTIV - 2nd  
payment- LINES  
lines A, B and E - of  
quote Q-62042  
uploaded- see for  
details.

**Amount:**

\$186,164.25

<p>UHF inside RF system including switching</p>	<p><b>Component Description:</b> Gates- INT TX - RF - KTIV - Line C - INV TE10004377-3 Q-62042-76148- ENGR CHANGED RF UNIT</p> <p><b>Amount:</b> \$10,921.81</p> <p><b>Component Description:</b> Gates- INT TX - RF - KTIV - Line C - for 2nd inv from Quote - Q-62042 uploaded</p> <p><b>Amount:</b> \$10,921.81</p> <p><b>Component Description:</b> Gates- INT TX - RF - KTIV - Line C</p> <p><b>Amount:</b> \$10,921.81</p>
<p>Sales Tax est</p>	<p><b>Component Description:</b> KTIV- GATES-INT TX - Sales tax PORTION OF TE10004377-3</p> <p><b>Amount:</b> \$13,622.97</p> <p><b>Component Description:</b> KTIV- INTERIM TX - EST sales tax as shown on inv TE10004377-2 and QUOTE - Q-62042 uploaded - added the rounding error 1 cent. 3-8-18</p> <p><b>Amount:</b> \$13,912.64</p>
<p>Transmitter - Training</p>	<p>Information not provided.</p>

Disconnect existing Transmitter	<p><b>Component Description:</b> KTIV- QCOMM- DECOMM - TRANSMITTER - INV Q19-013</p> <p><b>Amount:</b> \$23,500.00</p>
Freight - MFG	<p><b>Component Description:</b> 7-26-18 - ELIMINATING THE EST TAX FOR THIS SUBMITTAL.</p> <p><b>Amount:</b> N/A</p>
Site Survey - TX	<p><b>Component Description:</b> KTIV - SURVEY - INV-QC18-025</p> <p><b>Amount:</b> \$18,500.00</p>

Security - Site

**Component Description:** KTIV- SECURITY -  
INV 23976- 111-20  
THIS 1 OF 4 INV. 2  
AND 3 PAID 4TH  
UPLOADED 12-21-  
ADDED EMAIL  
DETAILS OF HRS  
AND PO MATRIX-  
RESUB-3-7-19-  
DATES  
CORRECTED

**Amount:** \$6,779.52

**Component Description:** KTIV-SECURITY-5  
/31-6/9 ON SITE  
INV23792

**Amount:** \$2,942.50

**Component Description:** KTIV- LAST OF 4  
INVOICES FOR  
SITE SECURITY  
KTIV-KMEG KPTH -  
12-21- NO  
FURTHER INFO.  
LAST INV FOR 60  
HRS FOR PERIOD  
OF 7-8 TO 7-21 AT  
22 DOLLARS PER  
HR PER LAST  
PAGE OF QUOTE  
AND PO

**Amount:** \$1,412.40

**Component Description:** KTIV-SECURITY-6  
/10-6/23-ON SITE-  
INV-23878

**Amount:** \$4,519.68

Sales Tax - Non Exempt -  
IA

**Component Description:** KTIV - GATES -  
MAIN - SALES TAX  
AT 7 PERCENT  
WAS DUE AND  
PAID.

**Amount:** \$101,177.09

**Component Description:** Gates - Main Tx -  
KTIV - INV for Sales  
tax est see Q-  
62047. We can true  
up on final invoice  
for TX if preferred.

**Amount:** \$44,521.39

**Component Description:** KTIV-GATES-MAIN-  
TX-SALES TAX  
1ST INV -  
TE10004376 - -6-13-  
PER 5-21-RFAS-  
REMOVED EST  
TAX

**Amount:** N/A

**Component Description:** KTIV-GATES-MAIN-  
TX-SALES TAX  
2ND INV -  
TE10004376-2- 6-  
13- ZEROED OUT  
PER RFAS 5-21

**Amount:** N/A



RF Accessories-other

**Component Description:** KTIV- GATES MAIN  
- 3RD INV  
TE10004376-3  
LINE C UPGRADE  
ONLY - ROUNDING  
DOWN ERROR OF  
1 CENT FOR LINE  
C DUE TO ONE  
THIRD  
CALCULATION  
**Amount:** \$29,774.96

**Component Description:** KTIV-Gates-INV  
TE10004376-2-  
LINE C. RF  
Accessories per Q-  
62047 - 2nd 1/3  
payment OF -72  
**Amount:** \$29,774.97

**Component Description:** KTIV-GATES-RF  
ACCESS-INV  
TE10004376 - LINE  
C - RESUBMITTED  
7-27  
**Amount:** \$29,774.97

ELECTRICAL EQ  
INSTALLATION

**Component Description:** KTIV- SCHRAMM-  
ELEC MAIN TX-  
INV 2952  
**Amount:** \$20,901.50

**Component Description:** KTIV-SCHRAMM-  
ELEC- MAIN TX -  
INV 2806 -RESUB-  
3-7-19  
**Amount:** \$46,954.00

**Component Description:** KTIV-SCHRAMM  
ELEC -MAIN TX-  
INV 2873  
**Amount:** \$21,044.10

**Component Description:** KTIV- SCHRAMM  
ELEC - CO NEW  
PO - TO FINISH  
TX- INV 2857  
QUOTE ADDED  
**Amount:** \$3,076.25

Channel 14 remediation

**Component Description:** KTIV-RF NOTE-  
INV 1015-CH14  
FCC REQUIRES  
LM NOTIFICATION-  
LAST PAGE HAS  
QUOTE WITH PO  
20008 THAT  
CLEARLY SHOWS  
TWO 5000  
PAYMENTS FOR  
THIS SERVICE  
THAT HAS BEEN  
FULLY EARNED  
**Amount:** \$5,000.00

**Component Description:** KTIV - RF  
NOTIFICATIONS -  
CH14 LM NOTICES  
- QUOTE AND  
VERIFIED -RESUB  
3-7-19

**Amount:** \$5,000.00

**Component Description:** KTIV- RF NOTIF -  
LAND MOBILE -  
INV 1015

**Amount:** \$5,000.00

**Component Description:** KTIV-RF NOTIF -  
LAND MOBILE INV  
1005

**Amount:** \$5,000.00

**Component Description:** KTIV-RF NOTE-  
CH14 REQUIRES  
LM NOTIFICATION-  
LAST PAGE HAS  
QUOTE WITH PO  
20008 THAT  
CLEARLY SHOWS  
TWO 5000  
PAYMENTS FOR  
THIS SERVICE  
THAT HAS BEEN  
FULLY EARNED

**Amount:** \$5,000.00

**Component Description:** KTIV-RF  
NOTIFICATIONS -  
CH14 LM NOTICES  
- INV 1005 -  
QUOTE AND  
VERIFIED- RESUB  
3-7-19-3-21-date  
change

**Amount:** \$5,000.00

Transmitter Site Preparation	<b>Component Description:</b> KTIV-PREP- MAIN-INV- QC18-057 <b>Amount:</b> \$10,500.00
Channel 14 Mask Filter	Information not provided.

UHF - Liquid Cooled Solid  
State Transmitter 52 - 61  
kW

**Component Description:** KTIV- GATES  
MAIN- 3RD INV  
TE10004376-3-  
SEE MATRIX -  
LINE A AND B-  
UPGRADE ONLY -  
SEE NOTES 5-29  
FCC EMAIL  
**Amount:** \$416,916.32

**Component Description:** KTIV-GATES-MAIN  
TX -2ND- INVOICE  
TE10004376-2 per  
Q-62047 lines A, B  
and E- PER 7-20-18  
RFAS- ROUNDED  
UP 1 CENT.  
**Amount:** \$447,687.76

**Component Description:** KTIV-GATES-MAIN  
TX -1ST- INVOICE  
TE10004376-per Q-  
62047 lines A, B  
and E  
RESUBMITTED 7-  
27  
**Amount:** \$447,687.75

**Component Description:** KTIV- QCOMM -  
INSTALLATION -  
PROOF CH14  
TURN UP  
SUPPORT INV  
QC19-003  
**Amount:** \$10,000.00

**Component Description:** MAIN TX DEPOSIT  
INVOICE KTIV per  
Q-62047 lines A, B  
and E  
**Amount:** \$603,873.41

RF Consulting Engineer	Information not provided.	
Service entrance 3 phase /800 amp/208 volt	Information not provided.	
Switchgear - industrial 800 amp	<p><b>Component Description:</b></p> <p><b>Amount:</b></p> <p><b>Component Description:</b></p> <p><b>Amount:</b></p> <p><b>Component Description:</b></p> <p><b>Amount:</b></p>	<p>Gates- MAIN TX - RF KTIV - Q-62047 line C. \$27,813.58</p> <p>KTIV-Gates- MAIN TX 1ST INV TE10004376-- RF - Q-62047 line C.- 6-13 ZEROED OUT AND MOVED TO RF COMP LINE ITEM N/A</p> <p>KTIV-Gates- MAIN TX - RF - Q-62047 line C. 5-1 - ZEROED out and added to Line Item - RF Accessories- other N/A</p>

Transformer 3 phase/480v - 300 KVA	<b>Component Description:</b> KTIV- Gates- Main Tx -Q-62047 - INV TE10004376-Line D RESUBMITTED 7- 27
	<b>Amount:</b> \$4,332.94
	<b>Component Description:</b> KTIV - GATES MAIN - LINE D ELECTRIC - OPEN PER QUOTE
	<b>Amount:</b> \$4,069.74
	<b>Component Description:</b> KTIV-SCHRAMM- ELEC- TRANSFORMER- INV2739
	<b>Amount:</b> \$26,970.00
	<b>Component Description:</b> KTIV- Gates- Main Tx -Q-62047 - Line D - FOR -72 COST
	<b>Amount:</b> \$4,332.94
	<b>Component Description:</b> Gates- Main Tx - KTIV - Q-62047 - Line D
	<b>Amount:</b> \$4,332.94
2" Rigid Conduit and Wiring (Cost per foot)	<b>Component Description:</b> KTIV- SCHRAMM ELEC -CONDUIT- INV 3010- QUOTE ADDED
	<b>Amount:</b> \$1,599.65
25 Ton system	Information not provided.
Additional field engineering time, 10-30 days	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
<b>Interim Antenna TFU-24WB-1-R</b>	<b>\$111,130.00</b>	<b>\$106,200.00</b>		<b>\$29,541.56</b>	
UHF - High Power, Side Mount, basic slot antenna, 24 bay,, 300 kW input, directional,, elliptically or circularly polarized	<i>\$0.00</i>	\$0.00	Cost of antenna is included in the KPTH deal. Shared with KTIV, KPTH and KMEG.	N/A	N/A
Sweep test of existing antenna	\$6,730.00	\$6,400.00	N/A	\$6,400.00	N/A
New combiner, cost per channel (without antenna)	\$84,200.00	\$80,000.00	each station requires a combiner to make the interim shared line and antenna work.	\$12,000.00	N/A
Elbow complex, broadband, at antenna input, per 6 1/8. feedline (if needed)	\$13,700.00	\$13,300.00	This cost will be shared with KPTH and KTIV, and KPTH is purchasing this equipment.	\$11,141.56	N/A
SWEEP NEW LINE AND ANTENNA	<i>\$6,500.00</i>	\$6,500.00	SWEEP FINAL CONFIGURATION OF INTERIM ANTENNA AND LINE BEFORE TURN UP.	N/A	N/A

<b>Primary Antenna TFU-31ETT</b>	<b>\$345,430.00</b>	<b>\$289,900.00</b>		<b>\$255,395.87</b>	
FREIGHT EQUIPMENT	<i>\$25,000.00</i>	\$25,000.00	FREIGHT FOR ANTENNA AND LINE FOR THE INTERIM AND MAIN NEW SYSTEM FROM MFG TO STORAGE OR STAGING AREA.	\$12,848.54	N/A
SWEEP NEW ANTENNA AND LINE	<i>\$10,500.00</i>	\$10,500.00	SWEEP FINAL CONFIGURATION OF INTERIM ANTENNA AND LINE BEFORE TURN UP. MAY REQUIRE MULTIPLE SWEEPS.	\$4,750.00	N/A
UHF - High Power Top Mount (200-1000 kW), One station antenna , elliptically or circularly polarized	\$289,500.00	\$235,000.00	Verified amount 10-12-17 - the change in antenna from the preliminary model does not affect the verified amount	\$223,036.88	N/A
Sweep test of existing antenna	\$6,730.00	\$6,400.00	N/A	\$5,760.00	N/A
Elbow complex, broadband, at antenna input, per 6 1/8. feedline (if needed)	\$13,700.00	\$13,000.00	N/A	\$9,000.45	N/A
<b>Sub-total</b>	<b>\$456,560.00</b>	<b>\$396,100.00</b>	<b>N/A</b>	<b>\$284,937.43</b>	<b>N/A</b>
<b>Total for all systems</b>	<b>\$6,259,766.59</b>	<b>\$5,575,956.43</b>	<b>N/A</b>	<b>\$3,499,384.36</b>	<b>N/A</b>

## Components

Actual Information	
Description	File Name
UHF - High Power, Side Mount, basic slot antenna, 24 bay,, 300 kW input, directional,, elliptically or circularly polarized	Information not provided.
Sweep test of existing antenna	<p><b>Component Description:</b> KTIV- DIE - SWEEP INT ANT - INV 323009</p> <p><b>Amount:</b> \$6,400.00</p>
New combiner, cost per channel (without antenna)	<p><b>Component Description:</b> KTIV-QCOMM-COMBINER INSTALLATION FOR INTERIM OPERATIONS INV QC19-006</p> <p><b>Amount:</b> \$12,000.00</p>
Elbow complex, broadband, at antenna input, per 6 1/8. feedline (if needed)	<p><b>Component Description:</b> KTIV- DIE - INTERIM ELBOW COMPLEX PARTS - INV 277011</p> <p><b>Amount:</b> \$9,000.00</p> <p><b>Component Description:</b> KTIV- INTERIM ANT LINE REDUCER CONNECTION - PART PLUS FREIGHT - NOT QUOTED.</p> <p><b>Amount:</b> \$2,141.56</p>
SWEEP NEW LINE AND ANTENNA	Information not provided.

<p>FREIGHT EQUIPMENT</p>	<p><b>Component Description:</b> KTIV-DIE-FREIGHT - INTERIM ELBOX COMPLEX INV 277011</p> <p><b>Amount:</b> \$1,049.64</p> <p><b>Component Description:</b> KTIV- DIE FREIGHT FOR MAIN LINE PARTS INV 242028</p> <p><b>Amount:</b> \$420.07</p> <p><b>Component Description:</b> KTIV-MAIN ANT - FREIGHT- INV- 162009</p> <p><b>Amount:</b> \$11,378.83</p>
<p>SWEEP NEW ANTENNA AND LINE</p>	<p><b>Component Description:</b> KTIV- RUCK - MAIN LINE AND ANT SWEEP FOR TURN UP ON CH14 - INV 1801294</p> <p><b>Amount:</b> \$4,750.00</p>

UHF - High Power Top Mount (200-1000 kW), One station antenna , elliptically or circularly polarized

**Component Description:** MAIN ANTENNA - DEPOSIT 10% LINES 1,2 AND 3.  
**Amount:** \$24,781.88

**Component Description:** KTIV-DIE-MAIN-2ND 45PERCENT - INV MAN00247 LINES 1,2 AND 3. Order Conf - 402001. V-POL upgrade is line 26 not billed to FCC. INV LESS 18,765.00 UPGRADE - amended 399 Antenna model  
**Amount:** \$111,518.44

**Component Description:** MAIN-ANTENNA-35% 11/1- LINES 1,2 AND 3.  
**Amount:** \$86,736.56

**Component Description:** KTIV-DIE-MAIN-2ND 45PERCENT - INV MAN00247 LINES 1,2 AND 3. 3-29-Uploaded Order Conf - 40200. V-POL upgrade is line not billed to FCC.  
**Amount:** \$111,518.44

Sweep test of existing antenna

**Component Description:** KTIV-MAIN  
SWEEP- 2ND 45%-  
LINE 25.  
MAN00247  
**Amount:** \$2,880.00

**Component Description:** MAIN ANTENNA -  
SWEEP TEST -  
DEPOSIT 10% -  
LINE 25  
**Amount:** \$640.00

**Component Description:** MAIN ANTENNA  
SWEEP- 35%-LINE  
25.  
**Amount:** \$2,240.00

**Component Description:** KTIV-DIE-MAIN-  
2ND 45PERCENT -  
INV MAN00247  
LINE 25. Order  
Conf - 402001.  
**Amount:** \$2,880.00

Elbow complex,  
broadband, at antenna  
input, per 6 1/8. feedline (if  
needed)

**Component Description:** KTIV-DIE-ELBOW -  
2ND 45% - LINE 4.  
3-29-uploaded  
Order Conf. 402001  
- Line 26 is V-POL  
upgrade not billed  
to FCC  
**Amount:** \$4,835.70

**Component Description:** ELBOW - 35% -  
LINE 4.  
**Amount:** \$3,239.25

**Component Description:** ELBOW -  
DEPOSIT 10% -  
LINE 4  
**Amount:** \$925.50

**Component Description:** KTIV-DIE-MAIN-  
2ND 45PERCENT -  
INV MAN00247  
LINE 4. Order Conf  
- 402001  
**Amount:** \$4,835.70

**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
<b>Primary Transmission Line</b>	<b>\$635,600.00</b>	<b>\$605,640.00</b>		<b>\$443,915.99</b>	
Rigid Transmission Line - copper, 7 3 /16"	\$620,600.00	\$590,640.00	N/A	\$428,915.99	N/A
Disconnect existing Interior RF components	<i>\$15,000.00</i>	\$15,000.00	Disconnect interior RF transmission line and filters from existing configuration and move within the building to make way for new facilities.	\$15,000.00	N/A
<b>Sub-total</b>	<b>\$635,600.00</b>	<b>\$605,640.00</b>	N/A	<b>\$443,915.99</b>	N/A
<b>Total for all systems</b>	<b>\$6,259,766.59</b>	<b>\$5,575,956.43</b>	N/A	<b>\$3,499,384.36</b>	N/A

**Components**

Actual Information	
Description	File Name



Rigid Transmission Line -  
copper, 7 3/16"

**Component Description:** KTIV- DIE -LINE  
PARTS FOR MAIN  
ANTENNA - INV  
242008 PO 20350  
**Amount:** \$163.00

**Component Description:** KTIV-DIE-MAIN-  
2ND 45PERCENT -  
INV MAN00247  
LINES 5,30 AND  
31. Order Conf -  
402001.  
**Amount:** \$213,570.34

**Component Description:** KTIV- DIE - MAIN  
LINE PARTS INV  
242048 INV 2 OF  
PO 20350  
**Amount:** \$1,300.00

**Component Description:** MAIN-TX LINE-  
10% LINE 5.  
**Amount:** \$46,751.70

**Component Description:** KTIV-DIE-ANT  
LINE - 2ND 45%  
INV MAN00247 -  
LINES 5,30 AND 31  
**Amount:** \$213,570.34

**Component Description:** KTIV- DIE LINE  
PARTS FOR MAIN  
INV 252015  
QUOTE 1696618  
**Amount:** \$3,500.00

**Component Description:** TX LINE - MAIN -  
35% -11/1 LINE 5.  
**Amount:** \$163,630.95

Disconnect existing Interior  
RF components

**Component Description:**

KTIV-QCOMM  
DECOMM - RF  
COMPONENTS  
INV QC19-013

**Amount:**

\$15,000.00

**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
<b>Primary Tower TOWER</b>	<b>\$862,000.00</b>	<b>\$819,000.00</b>		<b>\$107,834.60</b>	
Structural engineering tower load study for a documented tower with candelabra	\$20,000.00	\$19,000.00	N/A	\$0.00	N/A
Major tower reinforcement /modifications	\$421,000.00	\$400,000.00	N/A	N/A	N/A
Complex Tower (includes, for example, those with candelabras and/or stacked antennas)	\$421,000.00	\$400,000.00	N/A	\$107,834.60	N/A
<b>Sub-total</b>	<b>\$862,000.00</b>	<b>\$819,000.00</b>	<b>N/A</b>	<b>\$107,834.60</b>	<b>N/A</b>
<b>Total for all systems</b>	<b>\$6,259,766.59</b>	<b>\$5,575,956.43</b>	<b>N/A</b>	<b>\$3,499,384.36</b>	<b>N/A</b>

**Components**

Actual Information	
Description	File Name
Structural engineering tower load study for a documented tower with candelabra	Information not provided.

Major tower reinforcement /modifications	Information not provided.	
Complex Tower (includes, for example, those with candelabras and/or stacked antennas)	<p><b>Component Description:</b></p>	<p>KTIV-TOWER CREW ARRIVAL 5-2-18- AT SITE INV. 7241</p>
	<p><b>Amount:</b></p>	<p>\$53,917.30</p>
	<p><b>Component Description:</b></p>	<p>KTIV- PCI - ANT INSTALL - ACCEPTANCE INV - 7473</p>
	<p><b>Amount:</b></p>	<p>\$53,917.30</p>

**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 Justification
<b>Outside Professional Services</b>	<b>\$476,439.61</b>	<b>\$456,639.61</b>		<b>\$305,897.79</b>	
Plumbing work for TX cooling systems	<i>\$33,384.00</i>	\$33,384.00	KTIV- Plumbing for cooling systems fro new transmitters both Interim and Main. per local contractor Quote attached to inv.	\$9,850.00	
Vendor Travel Expenses	<i>\$21,485.00</i>	\$21,485.00	Reimbursable Vendor Travel expenses for working in the field on behalf of the station for the Repack project - see quote for estimated expenses. Q-17002-3-8-19 MINUS 480.00 TO OFFSET QC18-018 BEING CHARGED TO PM.	\$18,978.61	4-2-u revise QC17 corre
Quarterly reporting	<i>\$5,000.00</i>	\$5,000.00	Preparation and submittal of the FCC required quarterly report 387 by PM and attorney.	N/A	

General Repack Legal Services	<i>\$20,000.00</i>	\$20,000.00	memo-QMI Repack Invoice Memo for Shared Legal Expenses (Matter 104411 00054) for Form 399- 3-5-19 - legal services budget required additional funds to complete the PH 1 CH14 and shared facilities issues. Consolidate other open Legal billable line items.	\$18,705.07
Comprehensive coverage verification via field study, if needed	\$84,200.00	\$80,000.00	N/A	N/A
Attorney Fees - Prepare and File request for Special Temporary Authorization	\$14,720.00	\$14,000.00	N/A	N/A
Attorney Fees - Negotiation of lease and other matters for shared locations	\$4,210.00	\$4,000.00	N/A	\$1,895.00
Attorney Fees - Prepare and File FCC Form 2100 (main), License to Cover Application	\$2,365.00	\$2,250.00	N/A	N/A

Attorney Fees - Prepare and File FCC Form 2100 (main), Construction Permit Application	\$5,260.00	\$5,000.00	N/A	\$4,901.00	
Prepare request for Special Temporary Authorization	\$8,200.00	\$6,000.00	N/A	\$1,500.00	
Prepare engineering section of FCC Form 2100 (main), License to Cover Application	\$1,580.00	\$1,500.00	N/A	\$1,175.00	
Prepare engineering section of FCC Form 2100 (main), Construction Permit Application	\$3,155.00	\$3,000.00	N/A	\$0.00	
Perform engineering study for new channel assignment and antenna development	\$7,360.00	\$7,000.00	N/A	\$0.00	NEW C 14 AN AND APPL REC MOR THE I AMO ATTI DUE MC INTERI IS:

Address transition timing and coordination issues w/ other stations and wireless	\$2,630.00	\$2,500.00	N/A	N/A
Prepare and or review reimbursement form	\$2,630.00	\$2,500.00	N/A	N/A
Project management of the transition	\$221,990.00	\$210,750.00	QC18-018-480.00 WAS NOT SPLIT OUT TO PM TRAVEL LINE ITEM CAUSING THE PM TOTAL TO BE OVER REPORTED BY 480.00 AND TRAVEL UNDERSTATED 480.00. WE WILL REDUCE TRAVEL BY THE SAME AMOUNT.	\$210,622.50
Electric work and materials for Interim and Main	<b>\$38,270.61</b>	\$38,270.61	***System Notice: Estimate adjusted and locked because line has been superseded. ***ELECTRICAL MATERIALS AND WORK FOR BOT INTERIM AND MAIN TRANSFORMER PER SCHRAMM QUOTE AND PO 20224.	\$38,270.61
<b>Sub-total</b>	\$476,439.61	\$456,639.61	N/A	\$305,897.79



<b>Total for all systems</b>	\$6,259,766.59	\$5,575,956.43	N/A	\$3,499,384.36
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## Components

Actual Information	
Description	File Name
Plumbing work for TX cooling systems	<b>Component Description:</b> KTIV- FOULK - PLUMBING INV 3802866 - PROGRESS PAYMENT <b>Amount:</b> \$6,000.00
	<b>Component Description:</b> KTIV- FOULK - PLUMBING INV 381368 - 2ND INV FOR PROGRESS PAYMENT <b>Amount:</b> \$3,850.00
	<b>Component Description:</b> KTIV-QCOMM- PM TRAVEL-AUG- NOV-18 -INV QC19-015 <b>Amount:</b> \$16,560.00
	<b>Component Description:</b> KTIV-QCOMM- PM-Travel expenses INV - QC17-144- QUOTE QC17002 - RFAS DOES NOT AFFECT THIS ITEM <b>Amount:</b> \$2,418.61
Vendor Travel Expenses	Information not provided.
Quarterly reporting	Information not provided.
General Repack Legal Services	

**Component Description:** KTIV-BROOKS -  
LEGAL DEC18  
INV 3961871  
**Amount:** \$247.50

**Component Description:** KTIV- BROOKS -  
MAY18 - INV  
3953757  
**Amount:** \$396.00

**Component Description:** KTIV-BROOKS-  
GEN LEGAL  
JULY17 INV  
3942230 -RESUB  
3-7-19-3-21  
ADDED GEN  
MEMO  
**Amount:** \$275.00

**Component Description:** KTIV-BROOKS  
GEN LEGAL  
MAY17-INV  
3940170 - RESUB  
3-7-19 - 3-21-  
ADDED  
GENERAL MEMO  
11-17  
**Amount:** \$190.86

**Component Description:** KTIV-BROOKS-  
JUNE18-INV  
3954662  
**Amount:** \$99.00

**Component Description:** KTIV-BROOKS-  
LEGAL INV  
3949052 - JAN18  
**Amount:** \$49.50

**Component Description:** KTIV - BROOKS  
LEGAL SEPT18 -  
INV 3958277  
**Amount:** \$3,811.50

**Component Description:** Brooks-General  
Fee May-17-1/7th  
**Amount:** \$190.85

**Component Description:** Brooks General -  
JUNE 17 -inv-1  
/7th INV 3941325  
CL  
**Amount:** \$266.44

**Component Description:** KTIV - LEGAL  
fees - FEB18 -  
INV 3950146 4-  
16- changed inv  
date  
**Amount:** \$49.50

**Component Description:** KTIV- BROOKS  
JULY18-LEGAL  
INV 3955730  
**Amount:** \$1,386.00

**Component Description:** KTIV - BROOKS -  
APRIL18-  
INV3952577  
**Amount:** \$330.00

**Component Description:** KTIV- BROOKS  
GEN LEGAL -  
JUNE17 - INV  
3941325 RESUB  
3-7-19  
**Amount:** \$266.44

**Component Description:** Brooks-General -  
Sept-17-INV 1/7th  
**Amount:** \$80.57

**Component Description:** Brooks-General-  
NOV17-inv 1/7th  
**Amount:** \$221.57

**Component Description:** KTIV-BROOKS-  
LEGAL AUG18 -  
INV 3957117  
**Amount:** \$2,161.50

**Component Description:** KTIV- BROOKS -  
MAR18-  
INV3951194  
**Amount:** \$148.50

**Component Description:** KTIV-BROOKS-  
LEGAL - OCT18 -  
INV 3959627  
**Amount:** \$1,914.00

**Component Description:** KTIV-BROOKS -  
LEGAL DEC18 -  
INV 3960716  
**Amount:** \$6,637.50

**Component Description:** Brooks-General -  
AUG 17 - inv 1/7th  
**Amount:** \$117.85

**Component Description:** Brooks-General-  
July 17 - inv 1/7th  
**Amount:** \$275.00

	<p><b>Component Description:</b> Brooks-General-OCT17- inv 1/7th</p> <p><b>Amount:</b> \$322.28</p>
Comprehensive coverage verification via field study, if needed	Information not provided.
Attorney Fees - Prepare and File request for Special Temporary Authorization	Information not provided.
Attorney Fees - Negotiation of lease and other matters for shared locations	<p><b>Component Description:</b> CH 14 NEW FACILITY SHARED WITH KPTH AND KMEG</p> <p><b>Amount:</b> \$1,895.00</p>
Attorney Fees -Prepare and File FCC Form 2100 (main), License to Cover Application	Information not provided.

<p>Attorney Fees - Prepare and File FCC Form 2100 (main), Construction Permit Application</p>	<p><b>Component Description:</b> ATY FEES MAY 17 CP <b>Amount:</b> \$453.00</p>
	<p><b>Component Description:</b> ATTY FEES - KTIV - JUNE 17 CP <b>Amount:</b> \$359.00</p>
	<p><b>Component Description:</b> Brooks-KTIV-NOV17-legal-inv <b>Amount:</b> \$47.00</p>
	<p><b>Component Description:</b> ATTY - CP SEPT 17 FEES <b>Amount:</b> \$141.00</p>
	<p><b>Component Description:</b> Brooks- Legal- KTIV-NOV17-inv <b>Amount:</b> \$329.00</p>
	<p><b>Component Description:</b> ATTY FEES CP - AUG 17 KTIV <b>Amount:</b> \$2,820.00</p>
	<p><b>Component Description:</b> ATTY FEES CP - KTIV MAY17 <b>Amount:</b> \$752.00</p>
<p>Prepare request for Special Temporary Authorization</p>	<p><b>Component Description:</b> KTIV-LOHNES-STA- INV 201809-0275-09-1 - 3-21 ADDED RATE SHEET <b>Amount:</b> \$1,500.00</p>

<p>Prepare engineering section of FCC Form 2100 (main), License to Cover Application</p>	<p><b>Component Description:</b> KTIV-LOHNES-FORM 2100- PREP- INV 201811-0275-09-1- 3-21 ADDED RATE SHEET</p> <p><b>Amount:</b> \$1,175.00</p>
<p>Prepare engineering section of FCC Form 2100 (main), Construction Permit Application</p>	<p><b>Component Description:</b> ENGR - CP -</p> <p><b>Amount:</b> \$1,885.00</p>
<p>Perform engineering study for new channel assignment and antenna development</p>	<p><b>Component Description:</b> ENGR - NEW CHANNEL AND 399</p> <p><b>Amount:</b> \$2,850.00</p> <p><b>Component Description:</b> CP ALT CH ANALYSIS</p> <p><b>Amount:</b> \$5,210.00</p>
<p>Address transition timing and coordination issues w/ other stations and wireless</p>	<p>Information not provided.</p>
<p>Prepare and or review reimbursement form</p>	<p>Information not provided.</p>

Project management of the transition

**Component Description:** KTIV- QCOMM-  
PM-APRIL-  
JULY18 -INV  
QC18-063 PO  
19807-20391  
ADDED CL  
**Amount:** \$78,577.50

**Component Description:** KTIV- PM- 1  
THRU 3-18 INV  
QC18-047  
**Amount:** \$25,387.50

**Component Description:** KTIV-QCOMM-  
PM-INV QC17-  
144 -MAR THRU  
AUG17- QTE  
QC17002-RFAS  
INFO UPLOADED  
**Amount:** \$24,187.50

**Component Description:** KTIV-QCOMM -  
PM AUG-NOV 18  
- INV QC19-015  
**Amount:** \$59,175.00

**Component Description:** KTIV-QCOMM-  
PM 8-18-17- INV  
QC18-018  
**Amount:** \$23,295.00



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Electric work and materials  
for Interim and Main

**Component Description:** KTIV-SCHRAMM  
ELEC-INV2759  
**Amount:** \$16,657.23

**Component Description:** KTIV-SCHRAMM-  
ELEC-INV 2781 6-  
13-corrected \$  
**Amount:** \$21,613.38

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**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
<b>Other Expenses</b>	<b>\$63,580.00</b>	<b>\$63,015.00</b>		<b>\$10,358.96</b>	
SITE SAFETY AND CLEARING PREP	<i>\$3,500.00</i>	\$3,500.00	CLEAR THE CONTROLLED AREA AROUND THE TOWER OF BRUSH AND APPLY INSECTICIDE TO PREVENT ACCIDENTS AND PROMOTE A SAFE SITE AND MINIMIZING RISK.	\$0.00	N/A
MVPD Notification of Channel Change	<i>\$5,000.00</i>	\$5,000.00	Required FCC notifications.	N/A	N/A
Develop and air announcement of upcoming channel change	<i>\$15,000.00</i>	\$15,000.00	Required FCC announcements and good will public relations must we upheld. The production airing and disseminating of these announcements are fundamental to our operations.	N/A	N/A

Equipment Storage	<i>\$10,000.00</i>	\$10,000.00	Expecting multiple staggered equipment deliveries from different vendors and need to store and stage new equipment prior to installation date. Anticipate from 6-24 months of storage time.	\$0.00	N/A
Equipment Delivery and Handling Charges	<i>\$8,000.00</i>	\$8,000.00	Transport and handling fees from staging area to transmitter site.	\$3,135.00	N/A
Disposal Costs (for equipment and other waste, net of any salvage value)	<i>\$10,000.00</i>	\$10,000.00	Rent 40 yard dumpster with multiple pickups. Estimated 6-months on site. Potential hazardous waste management issues.	\$4,273.96	N/A
FCC Filing Fees - Special Temporary Authorization request	\$195.00	\$190.00	N/A	N/A	N/A
FCC Filing Fees - Form 2100 license to cover application	\$335.00	\$325.00	N/A	N/A	N/A
DTV Medical Facility Notification	\$11,550.00	\$11,000.00	N/A	\$2,950.00	N/A
<b>Sub-total</b>	<b>\$63,580.00</b>	<b>\$63,015.00</b>	<b>N/A</b>	<b>\$10,358.96</b>	<b>N/A</b>

<b>Total for all systems</b>	\$6,259,766.59	\$5,575,956.43	N/A	\$3,499,384.36	N/A
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## Components

Actual Information Description	File Name
SITE SAFETY AND CLEARING PREP	<p><b>Component Description:</b> KTIV- SITE CLEARING-PEST-JAY LAN - INV NONE GIVEN - USING ACCOUNT NO. 5961</p> <p><b>Amount:</b> \$2,006.25</p>
MVPD Notification of Channel Change	Information not provided.
Develop and air announcement of upcoming channel change	Information not provided.
Equipment Storage	<p><b>Component Description:</b> KTIV-Storage inv-part of INV1002</p> <p><b>Amount:</b> \$3,600.00</p>

Equipment Delivery and Handling Charges

**Component Description:** KTIV- CASEYS- DELIVERY OF EQ FROM STORAGE STAGING FACILITY. INV 1020  
**Amount:** \$2,500.00

**Component Description:** KTIV-BIG S - OFFLOAD TX LINE AND EQUIPMENT FROM DELIVERY TRUCK INV 12 - RESUB W QUOTE 3-7-19  
**Amount:** \$840.00

**Component Description:** KTIV- BARHHART- LIFTING AND SETTING NEW CIF FILTER - PART OF MATERIAL HANDLING OF TX INSTALLATION COVERED UNDER GATES INSTALL. INV 46410  
**Amount:** \$2,295.00

**Component Description:** KTIV- CASEYS DELIVERY OF ADDITIONAL TX LINE FROM STORAGE STAGING FACILITY. 3-8-19 not reimbursable - removing request. zeroed out.  
**Amount:** N/A

Disposal Costs (for equipment and other waste, net of any salvage value)

**Component Description:** KTIV-LINDBLOM-  
DISPOSAL NOV18  
INV 88375  
**Amount:** \$292.54

**Component Description:** KTIV- LINDBLOM-  
DISPOSAL -  
AUG18 - INV 86175  
**Amount:** \$688.87

**Component Description:** KTIV-LINDBLOM-  
DISPOSAL DEC18 -  
INV 89278  
**Amount:** \$69.55

**Component Description:** KTIV-LINDBLOM -  
DISPOSAL JULY18  
- INV 85311  
**Amount:** \$343.04

**Component Description:** KTIV- BIG S  
DISPOSAL AND  
MATERIAL  
HANDLING - INV 8  
- 3-7- ADDED  
QUOTE  
**Amount:** \$1,165.00

**Component Description:** KTIV-LINDBLOM-  
ROLLOFF - MAY18  
- INV 83469 -11-20-  
this is standard rate  
roll-off and no  
quote available- 12-  
21-ADDED EMAIL  
RATE SHEET  
FROM LINDBLOM  
**Amount:** \$374.25

**Component Description:** KTIV-LINDBLOM-  
DISPOSAL OCT18  
- INV 87588  
**Amount:** \$535.21

**Component Description:** KTIV-LINDBLOM -  
DISPOSAL JAN19  
INV 89788  
**Amount:** \$99.51

**Component Description:** KTIV- LINDBLOM -  
ROLLOFF MAY18 -  
INV 84872- 11-20  
stand roll off price  
no quote. 12-21-  
ADDED EMAIL  
RATES FROM  
LINDBLOM  
**Amount:** \$96.30

**Component Description:** KTIV-LINDBLOM-  
DISPOSAL FEB19  
INV 89883  
**Amount:** \$224.49

**Component Description:** KTIV -LINDBLOM-  
DISPOSAL NOV18  
2ND BOX- 1ST  
RELEASED 11-9  
INV 88276 - LATE  
FEE DEDUCTED 5  
DOLLARS  
**Amount:** \$288.90

**Component Description:** KTIV-LINDBLOM-  
DISPOSAL  
SEPT18 -INV 87293  
**Amount:** \$96.30

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	<table> <tr> <td data-bbox="687 472 1011 517"><b>Component Description:</b></td> <td data-bbox="1011 472 1428 517">KTIV-RF</td> </tr> <tr> <td data-bbox="687 517 1011 562"></td> <td data-bbox="1011 517 1428 562">Notification-inv-1005</td> </tr> <tr> <td data-bbox="687 562 1011 607"><b>Amount:</b></td> <td data-bbox="1011 562 1428 607">\$5,000.00</td> </tr> <tr> <td data-bbox="687 696 1011 741"><b>Component Description:</b></td> <td data-bbox="1011 696 1428 741">KTIV-RF NOTIF-</td> </tr> <tr> <td data-bbox="687 741 1011 786"></td> <td data-bbox="1011 741 1428 786">MED - INV 1029</td> </tr> <tr> <td data-bbox="687 786 1011 831"><b>Amount:</b></td> <td data-bbox="1011 786 1428 831">\$2,950.00</td> </tr> </table>	<b>Component Description:</b>	KTIV-RF		Notification-inv-1005	<b>Amount:</b>	\$5,000.00	<b>Component Description:</b>	KTIV-RF NOTIF-		MED - INV 1029	<b>Amount:</b>	\$2,950.00
<b>Component Description:</b>	KTIV-RF												
	Notification-inv-1005												
<b>Amount:</b>	\$5,000.00												
<b>Component Description:</b>	KTIV-RF NOTIF-												
	MED - INV 1029												
<b>Amount:</b>	\$2,950.00												



**Cost Information** **Grand Total**

	<b>Predetermined Cost Estimate</b>	<b>Estimated Cost</b>	<b>Actual Cost</b>
<b>Total for all systems</b>	\$6,259,766.59	\$5,575,956.43	\$3,499,384.36

**Reimbursement Status**

<b>Question</b>	<b>Response</b>
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
	<b>Submission of Estimated Expenses Statements</b>	<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"> <li>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.</li> <li>2. The above-named entity acknowledges that all certifications and attached documentation are considered material representations.</li> <li>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.</li> </ol>	

- 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.

**BREADY  
DREASLER**  
*CORPORATE  
DIRECTOR  
OF  
ENGINEERING*

08/01/2019

Certification	Section	Question	Response
	<p><b>Submission of Actual Cost Documentation Statements</b></p>	<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"> <li>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.</li> <li>2. The above-named entity certifies that the statements in this form and attached documentation are true, complete, and correct.</li> <li>3. The above-named entity acknowledges that all certifications and attached documentation are considered material representations.</li> </ol>	

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 must be promptly refunded to the Commission.

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.

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

**BRADY  
DREASLER**  
*CORPORATE  
DIRECTOR  
OF  
ENGINEERING*

08/01/2019

## Attachments