Department of Commerce (DOC)
National Oceanic and Atmospheric Administration
Transition Plan for the 1695-1710 MHz Band

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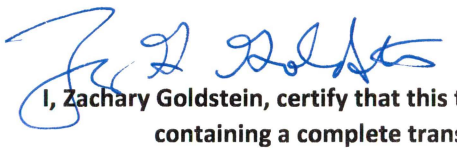

Certification regarding Classified and Sensitive Information:

I, Zachary Goldstein, certify that this transition plan, is cleared for release to the public and contains no classified or sensitive information. A separate Annex containing a complete transition plan including all classified and sensitive data is provided under separate cover via authorized channels.

8/12/2014

1	This Transition Plan includes pre-auction planning costs, as defined in Section O.2 of Annex O:				
	a. Total pre-auction planning costs:	$3.6900			
	b. The subtotal amount, if any, of pre-auction planning costs requested for pre-auction transfer:	$0.0000			
	c. The subtotal amount, if any, of pre-auction planning costs incurred after June 28, 2010, but before February 22, 2012:	$3.6900			
	d. This organization attests that:				
	[1] This transition plan provides for sharing and coordination of eligible frequencies with non-federal users, including reasonable accommodation for the use of eligible frequencies by non-federal users during the transition period.	Yes			
	[2] This transition plan provides for non-federal users to be able to use eligible frequencies during the transition period in geographic areas where this organization does not use such frequencies.	Yes			
	[3] During the transition period, this organization will make itself available for negotiation and discussion with non-federal users not later than 30 days after a written request.	Yes			
	[4] During the transition period, this organization will make available to a non-federal user with appropriate security clearances any classified information regarding the relocation process, on a need-to-know basis.	Yes			
	[5] (Only applicable if the amount in 1b above is greater than $0.00.) Funds transferred before an auction likely allow for timely implementation of relocation or sharing, thereby increasing net expected auction proceeds by an amount not less than the time value of the amount of funds transferred.	Yes			
2	There is additional information required to be included in the Transition Plan that is not included in this document because it is classified information, as defined in Section O.7 of Annex O.	No			
3	There is additonal information required to be included in the Transition Plan that is not included in this document because it is sensitive information, as defined in Section O.7 of Annex O.	No			
4	a. Name of Responsible Officer:	James L. Mentzer			
	b. (Optional) Office:	Office of Radio Frequency Management			
	c. (Optional) Telephone Number:	301-628-5649			
	d. (Optional) E-mail:	Jmentzer@doc.gov			
5	Total Transition Plan Cost	$263.303			

Serial Number	Center Freq./ Lower Band Limit (MHz)	Upper Band Limit (MHz) (if appl)	Emission Bandwidth (20 dB) (MHz)	Rx Bandwidth (3 dB) (MHz)	Bureau	System Use	System Name	Authorized Area of Operation	TX State	TX Latitude	TX Longitude	RX State	RX Latitude	RX Longitude	Sharing	Alternate Frequency Assignment	Transition Timeline (Months)
C 860054	1698		5.34	5.34	NESS	MetSat	WALLOPS ISLAND POES RCVR	Wallops Island, VA	SPC	xxxxxxx	xxxxxxxxx	VA	375645N	0752745W	Indefinite	None	39
							GILMORE CREEK POES RCVR	Gilmore Creek, AK				AK	645844N	1472942W	Indefinite	None	39
							MONTEREY POES RCVR	Monterey, CA				CA	363600N	1215400W	Indefinite	None	39
							FAIRBANKS POES RCVR	Fairbanks, AK				AK	644814N	1475234W	Indefinite	None	39
							SUITLAND POES RCVR	Suitland, MD				MD	385107N	0765612W	Indefinite	None	39
							STENNIS SPACE CENTER POES RCVR	Stennis Space Center, MS				MS	302359N	0893559W	Indefinite	None	39
							MIAMI AOML POES RCVR	Miami, FL				FL	254405N	0800945W	Indefinite	None	39
							BARROW POES RCVR	Barrow, AK				AK	711922N	1563641W	Indefinite	None	39
							FORD ISLAND POES RCVR	Ford Island, HI				HI	212212N	1575744W	Indefinite	None	39
							KANSAS CITY POES RCVR	Kansas City, MO				MO	391640N	0943944W	Indefinite	None	39
							MIAMI NHC POES RCVR	Miami, FL				FL	254416N	0802301W	Indefinite	None	39
C 860055	1702.5		5.34	5.34	NESS	MetSat	WALLOPS ISLAND POES RCVR	Wallops Island, VA	SPC	xxxxxxx	xxxxxxxxx	VA	375645N	0752745W	Indefinite	None	39
							FAIRBANKS POES RCVR	Fairbanks, AK				AK	644814N	1475234W	Indefinite	None	39
							SUITLAND POES RCVR	Suitland, MD				MD	385107N	0765612W	Indefinite	None	39
							MIAMI AOML POES RCVR	Miami, FL				FL	254405N	0800945W	Indefinite	None	39
							GILMORE CREEK POES RCVR	Gilmore Creek, AK				AK	645844N	1472942W	Indefinite	None	39
							BARROW POES RCVR	Barrow, AK				AK	711922N	1563641W	Indefinite	None	39
							MONTEREY POES RCVR	Monterey, CA				CA	363600N	1215400W	Indefinite	None	39
							STENNIS SPACE CENTER POES RCVR	Stennis Space Center, MS				MS	302359N	0893559W	Indefinite	None	39
							FORD ISLAND POES RCVR	Ford Island, HI				HI	212212N	1575744W	Indefinite	None	39
							KANSAS CITY POES RCVR	Kansas City, MO				MO	391640N	0943944W	Indefinite	None	39
							MIAMI NHC POES RCVR	Miami, FL				FL	254416N	0802301W	Indefinite	None	39
C 860056	1707		5.34	5.34	NESS	MetSat	WALLOPS ISLAND POES RCVR	Wallops Island, VA	SPC	xxxxxxx	xxxxxxxxx	VA	375645N	0752745W	Indefinite	None	39
							FAIRBANKS POES RCVR	Fairbanks, AK				AK	644814N	1475234W	Indefinite	None	39
							SUITLAND POES RCVR	Suitland, MD				MD	385107N	0765612W	Indefinite	None	39
							MIAMI AOML POES RCVR	Miami, FL				FL	254405N	0800945W	Indefinite	None	39
							GILMORE CREEK POES RCVR	Gilmore Creek, AK				AK	645844N	1472942W	Indefinite	None	39
							BARROW POES RCVR	Barrow, AK				AK	711922N	1563641W	Indefinite	None	39
							MONTEREY POES RCVR	Monterey, CA				CA	363600N	1215400W	Indefinite	None	39
							STENNIS SPACE CENTER POES RCVR	Stennis Space Center, MS				MS	302359N	0893559W	Indefinite	None	39
							FORD ISLAND POES RCVR	Ford Island, HI				HI	212212N	1575744W	Indefinite	None	39
							KANSAS CITY POES RCVR	Kansas City, MO				MO	391640N	0943944W	Indefinite	None	39
							MIAMI NHC POES RCVR	Miami, FL				FL	254416N	0802301W	Indefinite	None	39

Serial Number	Center Freq./ Lower Band Limit (MHz)	Upper Band Limit (MHz) (if appl)	Emission Bandwidth (20 dB) (MHz)	Rx Bandwidth (3 dB) (MHz)	Bureau	System Use	System Name	Authorized Area of Operation	TX State	TX Latitude	TX Longitude	RX State	RX Latitude	RX Longitude	Sharing	Alternate Frequency Assignment	Transition Timeline (Months)
C 050523	1694.8		0.4	0.4	NESS	MetSat	WALLOPS ISLAND GOES RCVR	Wallops Island, VA	SPC	xxxxxxx	75W	VA	375645N	0752745W	Indefinite	None	39
							GREENBELT GOES RCVR	Greenbelt, MD				MD	385955N	0765034W	Indefinite	None	39
C 050543	1694.8		0.4	0.4	NESS	MetSat	WALLOPS ISLAND GOES RCVR	Wallops Island, VA	SPC	xxxxxxx	135W	VA	375645N	0752745W	Indefinite	None	39
							GREENBELT GOES RCVR	Greenbelt, MD				MD	385955N	0765034W	Indefinite	None	39
C 940367	1694.8		0.4	0.4	NESS	MetSat	WALLOPS ISLAND GOES RCVR	Wallops Island, VA	SPC	xxxxxxx	75W	VA	375645N	0752745W	Indefinite	None	39
C 940368	1694.8		0.4	0.4	NESS	MetSat	WALLOPS ISLAND GOES RCVR	Wallops Island, VA	SPC	xxxxxxx	135W	VA	375645N	0752745W	Indefinite	None	39
C 970416	1694.8		0.4	0.4	NESS	MetSat	WALLOPS ISLAND GOES RCVR	Wallops Island, VA	SPC	xxxxxxx	105W	VA	375645N	0752745W	Indefinite	None	39

Serial Number	Center Freq./ Lower Band Limit (MHz)	Upper Band Limit (MHz) (if appl)	Emission Bandwidth (20 dB) (MHz)	Rx Bandwidth (3 dB) (MHz)	Bureau	System Use	System Name	Authoried Area of Operation	TX State	Service Area (TX)	TX Latitude	TX Longitude	RX State	Service Area (RX)	RX Latitude	RX Longitude	Sharing	Alternate Frequency Assignment	Transition Timeline (Months)
C 112001	1676		1	1	NWS		Radiosondes	USP	USP	USP				USP				TBD	
C 112002	1678		1	1	NWS		Radiosondes	USP	USP	USP				USP				TBD	
C 112003	1680		1	1	NWS		Radiosondes	USP	USP	USP				USP				TBD	
C 112004	1682		1	1	NWS		Radiosondes	USP	USP	USP				USP				TBD	

Serial Number	Center Freq./ Lower Band Limit (MHz)	Upper Band Limit (MHz) (if appl)	Emission Bandwidth (20 dB) (MHz)	Rx Bandwidth (3 dB) (MHz)	Bureau	System Use	System Name	Authorized Area of Operation	TX State	TX Latitude	TX Longitude	RX State	RX Latitude	RX Longitude	Sharing	Alternate Frequency Assignment	Transition Timeline (Months)
C140534/C140537	1680.2		0.4	0.4	NESS		GOES-R4	SPCE	GSO		137W/75W	VA	375645N	0752745W	Indefinite	None	Indefinite
C140534/C140537	1680.2		0.4	0.4	NESS		GOES-R4	SPCE	GSO		137W/75W	MD	385107N	0765612W	Indefinite	None	Indefinite
C140534/C140537	1680.2		0.4	0.4	NESS		GOES-R4	SPCE	GSO		137W/75W	FL	254516N	0802301W	Indefinite	None	Indefinite
C140534/C140537	1680.2		0.4	0.4	NESS		GOES-R4	SPCE	GSO		137W/75W	CO	395926N	1051551W	Indefinite	None	Indefinite
C140534/C140537	1680.2		0.4	0.4	NESS		GOES-R4	SPCE	GSO		137W/75W	WV	392602N	0801133W	Indefinite	None	Indefinite
C140534/C140537	1680.2		0.4	0.4	NESS		GOES-R4	SPCE	GSO		137W/75W	OK	351052N	0972621W	Indefinite	None	Indefinite
C140539/C140542	1686.6		12	12	NESS		GOES-R3	SPCE	GSO		137W/75W	VA	375645N	0752745W	Indefinite	None	Indefinite
C140539/C140542	1686.6		12	12	NESS		GOES-R3	SPCE	GSO		137W/75W	MD	385107N	0765612W	Indefinite	None	Indefinite
C140539/C140542	1686.6		12	12	NESS		GOES-R3	SPCE	GSO		137W/75W	FL	254516N	0802301W	Indefinite	None	Indefinite
C140539/C140542	1686.6		12	12	NESS		GOES-R3	SPCE	GSO		137W/75W	CO	395926N	1051551W	Indefinite	None	Indefinite
C140539/C140542	1686.6		12	12	NESS		GOES-R3	SPCE	GSO		137W/75W	WV	392602N	0801133W	Indefinite	None	Indefinite
C140539/C140542	1686.6		12	12	NESS		GOES-R3	SPCE	GSO		137W/75W	OK	351052N	0972621W	Indefinite	None	Indefinite
C140544/C140547	1693		0.016	0.08	NESS		GOES-R2	SPCE	GSO		137W/75W	VA	375645N	0752745W	Indefinite	None	Indefinite
C140544/C140547	1693		0.016	0.08	NESS		GOES-R2	SPCE	GSO		137W/75W	MD	385955N	0765034W	Indefinite	None	Indefinite
C140544/C140547	1693		0.016	0.08	NESS		GOES-R2	SPCE	GSO		137W/75W	WV	392602N	0801133W	Indefinite	None	Indefinite
C140549/C140552	1694.1		0.096	1.2	NESS		GOES-R1	SPCE	GSO		137W/75W	VA	375645N	0752745W	Indefinite	None	Indefinite
C140549/C140552	1694.1		0.096	1.2	NESS		GOES-R1	SPCE	GSO		137W/75W	MD	385107N	0765612W	Indefinite	None	Indefinite
C140549/C140552	1694.1		0.096	1.2	NESS		GOES-R1	SPCE	GSO		137W/75W	FL	254516N	0802301W	Indefinite	None	Indefinite

Serial Number	Center Freq./ Lower Band Limit (MHz)	Upper Band Limit (MHz) (if appl)	Emission Bandwidth (20 dB) (MHz)	Rx Bandwidth (3 dB) (MHz)	Bureau	System Use	System Name	Authorized Area of Operation	TX State	TX Latitude	TX Longitude	RX State	RX Latitude	RX Longitude	Sharing	Alternate Frequency Assignment	Transition Timeline (Months)
C140549/C140552	1694.1		0.096	1.2	NESS		GOES-R1	SPCE	GSO		137W/75W	CO	395926N	1051551W	Indefinite	None	Indefinite
C140549/C140552	1694.1		0.096	1.2	NESS		GOES-R1	SPCE	GSO		137W/75W	WV	392602N	0801133W	Indefinite	None	Indefinite
C140549/C140552	1694.1		0.096	1.2	NESS		GOES-R1	SPCE	GSO		137W/75W	OK	351052N	0972621W	Indefinite	None	Indefinite
C140549/C140552	1694.1		0.586	1.2	NESS		GOES-R1	SPCE	GSO		137W/75W	VA	375645N	0752745W	Indefinite	None	Indefinite
C140549/C140552	1694.1		0.586	1.2	NESS		GOES-R1	SPCE	GSO		137W/75W	MD	385107N	0765612W	Indefinite	None	Indefinite
C140549/C140552	1694.1		0.586	1.2	NESS		GOES-R1	SPCE	GSO		137W/75W	FL	254516N	0802301W	Indefinite	None	Indefinite
C140549/C140552	1694.1		0.586	1.2	NESS		GOES-R1	SPCE	GSO		137W/75W	CO	395926N	1051551W	Indefinite	None	Indefinite
C140549/C140552	1694.1		0.586	1.2	NESS		GOES-R1	SPCE	GSO		137W/75W	WV	392602N	0801133W	Indefinite	None	Indefinite
C140549/C140552	1694.1		0.586	1.2	NESS		GOES-R1	SPCE	GSO		137W/75W	OK	351052N	0972621W	Indefinite	None	Indefinite

Serial Number	Center Freq./ Lower Band Limit (MHz)	Upper Band Limit (MHz) (if appl)	Emission Bandwidth (20 dB) (MHz)	Rx Bandwidth (3 dB) (MHz)	Bureau	System Use	System Name	Authorized Area of Operation	TX State	TX Latitude	TX Longitude	RX State	RX Latitude	RX Longitude	Sharing	Alternate Frequency Assignment	Transition Timeline (Months)
C 050517	1681.478		0.4	0.4	NESS		GOES-N7	SPCE	GSO		75W	VA	375645N	0752745W	Indefinite	None	Indefinite
C 050517	1681.478		0.4	0.4	NESS		GOES-N7	SPCE	GSO		75W	MD	385955N	0765034W	Indefinite	None	Indefinite
C 050517	1681.478		0.4	0.4	NESS		GOES-N7	SPCE	GSO		75W	CO	395926N	1051551W	Indefinite	None	Indefinite
C 050537	1681.478		0.4	0.4	NESS		GOES-N7	SPCE	GSO		135W	VA	375645N	0752745W	Indefinite	None	Indefinite
C 050537	1681.478		0.4	0.4	NESS		GOES-N7	SPCE	GSO		135W	MD	385955N	0765034W	Indefinite	None	Indefinite
C 050537	1681.478		0.4	0.4	NESS		GOES-N7	SPCE	GSO		135W	CO	395926N	1051551W	Indefinite	None	Indefinite
C 050518	1685.7		4.22	4.22	NESS		GOES-N6	SPCE	GSO		75W	USP		0.0000	Indefinite	None	Indefinite
C 050538	1685.7		4.22	4.22	NESS		GOES-N6	SPCE	GSO		135W	VA	375645N	0752745W	Indefinite	None	Indefinite
C 940357	1685.7		4.22	4.22	NESS		GOES-N6	SPCE	GSO		75W	VA	375645N	0752745W	Indefinite	None	Indefinite
C 940358	1685.7		4.22	4.22	NESS		GOES-N6	SPCE	GSO		135W	VA	375645N	0752745W	Indefinite	None	Indefinite
C 970411	1685.7		4.22	4.22	NESS		GOES-N6	SPCE	GSO		105W	VA	375645N	0752745W	Indefinite	None	Indefinite
C 050519	1691		0.586	0.586	NESS		GOES-N5	SPCE	GSO		75W	USP		0.0000	Indefinite	None	Indefinite
C 050539	1691		0.586	0.586	NESS		GOES-N5	SPCE	GSO		135W	VA	375645N	0752745W	Indefinite	None	Indefinite
C 050539	1691		0.586	0.586	NESS		GOES-N5	SPCE	GSO		135W	MD	385107N	0765612W	Indefinite	None	Indefinite
C 050539	1691		0.586	0.586	NESS		GOES-N5	SPCE	GSO		135W	MD	385955N	0765034W	Indefinite	None	Indefinite

Serial Number	Center Freq./ Lower Band Limit (MHz)	Upper Band Limit (MHz) (if appl)	Emission Bandwidth (20 dB) (MHz)	Rx Bandwidth (3 dB) (MHz)	Bureau	System Use	System Name	Authorized Area of Operation	TX State	TX Latitude	TX Longitude	RX State	RX Latitude	RX Longitude	Sharing	Alternate Frequency Assignment	Transition Timeline (Months)
C 050520	1692.7		0.05	0.05	NESS		GOES-N4	SPCE	GSO		75W	USP		0.0000	Indefinite	None	Indefinite
C 050540	1692.7		0.05	0.05	NESS		GOES-N4	SPCE	GSO		135W	VA	375645N	0752745W	Indefinite	None	Indefinite
C 050521	1694		0.016	0.016	NESS		GOES-N3	SPCE	GSO		75W	VA	375645N	0752745W	Indefinite	None	Indefinite
C 050521	1694		0.016	0.016	NESS		GOES-N3	SPCE	GSO		75W	MD	385955N	0765034W	Indefinite	None	Indefinite
C 050541	1694		0.016	0.016	NESS		GOES-N3	SPCE	GSO		135W	VA	375645N	0752745W	Indefinite	None	Indefinite
C 740354	1694		0.02	0.02	NESS		GOES-N3	SPCE	GSO		75W	CO	400750N	1051422W	Indefinite	None	Indefinite
C 740355	1694		0.02	0.02	NESS		GOES-N3	SPCE	GSO		135W	CO	400750N	1051422W	Indefinite	None	Indefinite
C 940361	1694		0.004	0.004	NESS		GOES-N3	SPCE	GSO		75W	VA	375645N	0752745W	Indefinite	None	Indefinite
C 940362	1694		0.004	0.004	NESS		GOES-N3	SPCE	GSO		135W	VA	375645N	0752745W	Indefinite	None	Indefinite
C 970413	1694		0.004	0.004	NESS		GOES-N3	SPCE	GSO		105W	VA	375645N	0752745W	Indefinite	None	Indefinite
C 050522	1694.5		0.4	0.4	NESS		GOES-N2	SPCE	GSO		75W	VA	375645N	0752745W	Indefinite	None	Indefinite
C 050522	1694.5		0.4	0.4	NESS		GOES-N2	SPCE	GSO		75W	MD	385955N	0765034W	Indefinite	None	Indefinite
C 050542	1694.5		0.4	0.4	NESS		GOES-N2	SPCE	GSO		135W	VA	375645N	0752745W	Indefinite	None	Indefinite
C 050542	1694.5		0.4	0.4	NESS		GOES-N2	SPCE	GSO		135W	MD	385955N	0765034W	Indefinite	None	Indefinite
C 940365	1694.5		0.4	0.4	NESS		GOES-N2	SPCE	GSO		75W	VA	375645N	0752745W	Indefinite	None	Indefinite
C 940366	1694.5		0.4	0.4	NESS		GOES-N2	SPCE	GSO		135W	VA	375645N	0752745W	Indefinite	None	Indefinite
C 970415	1694.5		0.4	0.4	NESS		GOES-N2	SPCE	GSO		105W	VA	375645N	0752745W	Indefinite	None	Indefinite

Timeline (Months after Auction)				
Serial Number	**Geographic Location (Service Area)**	**Begin Temporary Sharing**	**Begin Indefinite Sharing**	**Vacate Assignment**
	AK Elmendorf AFB-Anchorage		39	
	AK Barrow		39	
	AK Fairbanks		39	
	CO Boulder		39	
	HI Hickam AFB-Ford Island		39	
	WV Fairmont		39	
	MD Suitland-Greenbelt		39	
	MO Kansas City		39	
	FL Miami-Miami (OAML)		39	
	FL Miami-Miami (HNC)		39	
	CA Monterey		39	
	OK Norman		39	
	MI Stennis Space Center		39	
	MD Suitland-Suitland		39	
	VA Wallops Island		39	
	GU Barrigada		39	
	PR Guaynabo		39	

System Name	System ID	Pre-Auction Costs ($M)	Pre-Auction Transfer Requested ($M)	Pre-Auction Costs Incurred between 6-28-2010 and 2-22-2012	Equipment-Related Costs ($M)	Deployment-Related Costs ($M)	Total Cost for System ($M)	Begin Expenditure of Funds	End Expenditure of Funds	Costs Associated with Expanded Capability	Description of Expanded Capability	Explanation/ Justification
AK Elmendorf AFB-Anchorage	NOAA-1				$5.828	$5.636	$11.464					Monitoring Capability
AK Barrow	NOAA-2				$3.869	$3.325	$7.194					Monitoring Capability
AK Fairbanks	NOAA-3				$6.532	$6.386	$12.918					Monitoring Capability
CO Boulder	NOAA-4				$2.448	$4.118	$6.566					Monitoring Capability
HI Hickam AFB-Ford Island	NOAA-5				$2.626	$5.057	$7.683					Monitoring Capability
WV Fairmont	NOAA-6				$2.499	$3.797	$6.296					Monitoring Capability
MD Greenbelt	NOAA-7				$0.876	$2.547	$3.423					Monitoring Capability
MO Kansas City	NOAA-8				$0.893	$2.608	$3.501					Monitoring Capability
FL Miami-Miami (OAML)	NOAA-9				$0.816	$2.437	$3.253					Monitoring Capability
FL Miami-Miami (HNC)	NOAA-10				$0.876	$2.510	$3.386					Monitoring Capability
CA Monterey	NOAA-11				$0.832	$2.688	$3.520					Monitoring Capability
OK Norman	NOAA-12				$0.943	$2.539	$3.482					Monitoring Capability
MI Stennis Space Center	NOAA-13				$1.671	$3.196	$4.867					Monitoring Capability
MD Suitland	NOAA-14				$3.210	$11.846	$15.056					Monitoring Capability
VA Wallops Island	NOAA-15				$9.648	$10.703	$20.351					Monitoring Capability
PR Guaynabo	NOAA-16				$2.372	$2.830	$5.202					Monitoring Capability
GU Barrigada	NOAA-17				$9.612	$5.435	$15.047					Monitoring Capability
Pre-Acquisition/GCs & Fees	NOAA-18					$5.537	$5.537					Monitoring Capability
Hub (NSOF)	NOAA-19				$2.447	$31.681	$34.128					
Monitoring System (Total)					$57.998	$114.876	$172.874	2/1/2015	5/1/2018			Monitoring Capability
GOES-R Redesign	NOAA-20	$3.69	3.690	3.690	0.000	0.000	3.690	6/28/2010	2/22/2012			Studies and contract modifications required based on redesign to accommodate frequency shift.
Radiosonde Relocation	NOAA-21	$0.00	0.000	0.000	67.258	12.881	80.139	2/23/2015	2/19/2021	$80.139	Provide automation of radiosonde launches	Radiosonde Deconfliction/Relocation -- Radiosondes being relocated to 403 MHz to accommodate GOES spectrum alignment consequential to 1695 band auction. Expanded Capability: Realization of long term savings through realignment in required staffing to support operations
Coordination Portal	NOAA-22						$6.600	2/1/2015	2/1/2018			The establishment of a Coordination Portal is required for the successful coordination between the AWS Licensee and the DoC/NOAA Spectrum Manager. It will enable the coordination process to be conducted in an orderly manner with electronic records of all transactions/messages between the licensee and the Agency recorded for future reference.

System Name	Pre-Auction Costs ($M)	Pre-Auction Transfer Requested ($M)	Pre-Auction Costs Incurred between 6-28-2010 and 2-22-2012	Equipment-Related Costs ($M)	Deployment-Related Costs ($M)	Total Cost for System ($M)	Begin Expenditure of Funds	End Expenditure of Funds	Description	Explanation/ Justification
GOES-R	$0.75	$0.750	$0.750			0.750	6/28/2010	2/22/2012	Ground System Special Study	Study and modifications required based on frequency shift.
GOES-R	$0.550	$0.550	$0.550			$0.550	6/28/2010	22-Feb	Antenna Contract	Study and modifications required based on frequency shift.
GOES-R	$0.600	$0.600	$0.600			$0.600	6/28/2010	2/22/2012	Core Ground Contract	Contract cost changes based on frequency modifications requested.
GOES-R	$0.510	$0.510	$0.510			$0.510	6/28/2010	2/22/2012	Spacecraft Contract	Contract cost changes based on frequency modifications requested.
GOES-R	$0.700	$0.700	$0.700			$0.700	6/28/2010	2/22/2012	Interference Mitigation Study	Program study to determine risk factors associated with proposed use of 1695-1710 MHz band.
ALABASTER	$0.580	$0.580	$0.580			$0.580	8/1/2010	2/22/2012	NESDIS Contracted Broadband Analysis services	Spectrum analysis services contracted to determine risk and sharing factors required in sharing spectrum with wireless broadband.
Total GOES-R	$3.690	$3.690	$3.690			$3.69				

	Interaction required with NTIA to implement this Transition Plan
1	Coordination relative to tracking receiver-transmitter pairs where other agencies are involved (to ensure all receiver sites by other agencies are taken into account.)
2	Engage ITS to setup coordination portal
3	Faciliate monitoring enforcement should interference above allowable levels occur.
4	Facilitate the successful relocation of the Radiosondes from 1674.5 MHz - 1679.5 MHz to 401-406 MHz. Geosynchronous satellites spectrum use is to be shifted down by 3.4 MHz to facilitate 1695–1710 MHz band re-purposing and provide more protection from RFI from broadband at 1695 MHz – 1710Mhz
5	To assist in the development and coordination of future sites
6	Facilitate coordination with FCC in developing initial coordination agreements and dealing with enforcement issues relative to band sharing arrangements

Serial Number	Description of Classified or Sensitive Information	Reason for Exclusion	Reference
	None		Not Applicable

	Factor	Impact on Fulfillment of Transition Plan
1	Technology/Development	Adequate and proper phasing of funds will be required to enable development of capabilities necessary to allow sharing of spectrum in accordance with legislation.
2	Alternate Assignments	Channel assignments for radiosonde channels in the 401-406 MHz band are granted and will deconflict frequency reuse between radiosondes and metsats.
3	Frequency Sharing Coordination	Ability to validate entities' methodologies for sharing.
4	Regulatory Criteria	Regulatory criteria will provide private sector user incentive to not interfere with Federal stations without jeopardizing NOAA's ability to complete the mission and/or execute its primary mission essential functions.
5	Incumbent Support	Incumbents will support interference testing to determine feasibility of co-existence and necessary equipment alterations, and they will support the relocation plan and equipment deployment as necessary to address interference issues.

The following additonal informaiton is provided:

Executive Summary: This transition plan identifies all the required actions and costs needed to make the 1695-1710 MHz Band available for auction for shared use with wireless broadband. (1) Pre-auction costs are identified as a result of direction by NTIA and OMB to redesign the GOES-R (including the direct broadcast communications subsystem, ground segment transmitters, receivers, filters and commanding software, and antenna) originally planned for 1697.4 MHz to below 1695 MHz. (2) As a result of the GOES-R redesign, NOAA's radiosondes (balloon-borne instruments for atmospheric measurements) also require changes due to the large number in use. An analysis of options determined the best option is relocating these systems to the 401 - 406 MHz band. (3) In addition to the establishment of protection distances around critical weather satellite receiver locations, DoC plans to install monitoring capabilities at each receiver location to ensure for continuous monitoring of compliance with the interference threshold criteria established and to provide the ability to identify and mitigate any interference experienced. (4) Lastly, DoC supports and is planning on the establishment of a spectrum coordination portal in conjunction with the DoD and DoI to facilitate the successful coordination between the AWS Licensees and federal agencies of sharing arrangements now and into the future. This plan includes costs for a portion (cost-share) of the total cost of this capability. Additional Details are provided below:

National Weather Service (NWS) Radiosonde Program

The following provides rational for cost recovery for the NWS Radiosonde Program. The NWS Radiosondes primarily provide upper air observations. Approximately 75,000 are released yearly. Generally 2 per day are released from 102 sites in the conterminous U.S., Alaska, the Pacific region and Puerto Rico. Additionally, the NWS supports operations at 10 sites in the Caribbean. Radiosondes currently operate in the 1675.4 MHz – 1679.5 MHz band (Meteorological Aids). Currently, plans are in the works for spectrum used by the geosynchronous satellites to be shifted down by 3.4 MHz to enable re-purposing of 1695–1710 MHz band by providing more protection from RFI from LTE operations at the 1695 – 1710MHz band.

1. If the Radiosondes remain in the 1675.4 MHz – 1679.5 MHz band, development of a new system channel plan to permit minimal risk to operations adjacent to GOES-R band would be required. The optimal solution is to relocate the Radiosondes to 401-406 MHz.

2. Relocating the Radiosondes to 401 - 406 MHz band would facilitate a shift by the Geosynchronous Satellites to 1679.6–1695 MHz:

The costs associated with relocating the Radiosondes to 401 - 406 MHz band is identified in Tab E of the Transition Plan.

1. Deployment related costs - $12.881M

2. Deployment (401 - 406 MHZ) & Disposal (Legacy System) - $67.258M

3. Total cost of Radiosonde Relocation to 403 MHz - $80.139M

Table 1 is a breakdown of the Radiosondes costs.

Breakout of Radiosonde System Replacement Costs

Category	*Cost Item*	*Unit Cost*	*Qty*	*Costs*
Equipment Costs	Autosonde Equipment	$620,000	96	$59,520,000
	Spares	$62,000	96	$5,952,000
	Acquisition Costs (3%)	$18,600	96	$1,785,600
	SubTotal			$67,257,600
Deployment Costs	Site Prepration	$15,000	96	$1,440,000
	Delivery/Installation	$10,000	96	$960,000
	Engineering/Technical Support (labor hrs)	$100	37,000	$3,700,000
	Travel (96 sites X 3 people/visits)	$3,000	288	$864,000
	Qualification Radiosonde Units	$230	600	$138,000
	Qualification Equipment Shipping	$500	6	$3,000
	Qualification Support Travel	$3,000	18	$54,000
	Legacy System Disposal	$5,000	96	$480,000
	Agency M&A/Overhead (7%)			$5,242,762
	Subtotal			$12,881,762
Grand Total				**$80,139,362**

Notes:
- 96 sites is 92 US&P Sites, plus NWSTC, NRC, and Sterling (2)
- Caribbean are not U.S. RF Assignments and already planned for conversion, so not funded
- Engineering and Technical support are contract labor for two years and three years, respectively

Table 1 - Radiosondes Costs

Spectrum Monitoring Capability at DOC RX Sites

PROPOSED INTERFERENCE MITIGATION OBJECTIVES

1. The carriers and NOAA must be able to mitigate interference to enable operation on TBD sub-bands of 1695-1710 MHz, at some TBD frequency, spatial and temporal separations, in otherwise simultaneous operations, as can be stipulated in a legal sharing agreement.

2. NOAA monitors carrier compliance with agreed-upon Interference Protection Criteria (IPC) - related threshold interference levels.

3. NOAA specifies how and when interference levels are measured and/or imputed or computed.

4. NOAA specifies how and when the carriers are notified of their non-compliance with the IPCs.

5. NOAA provides carriers with IPCs to guide control of carrier operating parameters to minimize harmful interference to incumbent NOAA operation.

6. NOAA's specification of IPC must protect NOAA downlink requirements (e.g., link quality measures –e.g., BER and/or signal to noise + interference ratios)

7. Agreements specify how the carriers would respond to NOAA notices (e.g., by directing the UE's to lower their EIRPs, particularly for those close to the protected earth station).

8. Agreements specify the types of interference signals to be detected, measured and identified, means of detection and measurement, discriminants used, and the parties responsible.

9. Agreements specify how quickly carriers must respond to NOAA notice of non-compliance.

10. Agreements incorporate legal sanctions against carriers for systematic non-compliances.

DoD and DoI sites will have to incur the cost for purchasing the required hardware and software and installation, training and sustainment costs.

Cost of the monitoring capability includes all system engineering, design, development, deployment/installation and maintenance and operations for 10 years.

• Total cost of monitoring capability (Design, Development & Implementation): $180.1M

Table 2 is a list of the potentially impacted DoC sites and the cost of design, development and implementation at each location.

AK Elmendorf AFB-Anchorage - $11.464M	FL Miami-Miami (OAML) - $3.253M	MO Kansas City - $3.501M
AK Barrow - $7.194M	FL Miami-Miami (HNC) - $3.386M	GU Barrigada - $15.047M
AK Fairbanks - $12.918	CA Monterey - $3.520M	PR Guaynabo - $5.202M (DOC/DOI Site)
CO Boulder - $6.566M	OK Norman - $3.482M	Hub (NSOF) - $34.128M
HI Hickam AFB-Ford Island - $7.683M	MI Stennis Space Center - $4.867M	
WV Fairmont - $6.296M	MD Suitland-Suitland - $15.056M	
MD Greenbelt - $3.423M	VA Wallops Island - $20.351M	

Table 2 - DoC/NOAA Sites that require a monitoring capability

The total cost for the Monitoring capability/system is estimateed to be $172.872M. This includes design, development, testing, test beds and integration and 3 years of O&M costs after the system is operational. (See below for cost summary.)

Summary of Costs for Development and 3 Years of O&M

HI	FY$12K	Pre-Acq	Dev Yr 1	Dev Yr 2	Dev Yr 3	O&M		
WBS	Description	Sep14-Mar15	Apr 15-Sep15	FY16	FY17	FY18	FY19	FY20
0.0	Pre-Acq / Acq	$ 5,175						
1.0	Project Mgmt		$ 5,077	$ 10,154	$ 10,154			
2.0	System Design and Dev		$ 2,200	$ 4,400	$ 4,400			
3.0	COTS HW - Hub		$ 170			$ 9	$ 9	$ 9
4.0	COTS HW - Field		$ 14,678			$ 704	$ 704	$ 704
5.0	Comm Infrast - Hub			$ 68	$ 50	$ 50	$ 50	$ 50
6.0	Comm Infrast - Field			$ 3,449	$ 3,242	$ 3,242	$ 3,242	$ 3,242
7.0	SW Engineering		$ 3,630	$ 7,260				
8.0	COST SW		$ 10,486			$ 1,525	$ 1,525	$ 1,525
9.0	Integration - Hub				$ 400			
10.0	Integ and Instal - Field			$ 5,957	$ 3,421			
11.0	Facilities		$ 18,000					
12.0	O&M Labor					$ 5,496	$ 5,496	$ 5,496
13.0	OGCs & Fee	$ 362	$ 10,848	$ 6,258	$ 4,333	$ 1,874	$ 1,874	$ 1,874
	ANNUAL TOTAL FY12$K	**$ 5,537**	**$ 65,089**	**$ 37,545**	**$ 26,000**	**$ 12,900**	**$ 12,900**	**$ 12,900**
	DEVELOPMENT TOTAL	**$ 134,172**						
	GRAND TOTAL FY12$K	**$ 172,872**						

Spectrum Coordination Portal

The establishment of a Spectrum Coordination Portal is to facilitate the successful coordination between the AWS Licensee and the DoC/NOAA Spectrum Manager. It will enable the coordination process to be conducted in an orderly manner with electronic records of all transactions/messages between the licensee and the Agency recorded for future reference.

• The portal will be linked to a tracking database that records all data exchanges between the AWS Licensee and the DoC/NOAA.

• The AWS Portal will be accessible to AWS Licensees via a unique login ID and password.

• The information exchanged within the portal is viewable only by the AWS submitter on an account basis, The Portal technical team, and other approved Government users.

Costs associated with the Coordination Portal include the design, development, hardware, software and maintenance/sustainment support for 10 years, 2/1/15 – 1/31/25.

Total estimated cost - $6.6M, DoC costs over the life of the project. This estimate is for the DoC contribution to the Portal. The expectation is that the DoD and DoI will contribute to the effort as well.

Coordination Zones

The NTIA CSMAC WG 1 has developed a sharing framework designed to protect incumbent NOAA operations in band from 1695-1710 MHz and adjacent operations of both co-channel polar orbiting satellites and geostationary operations in the adjacent 1675-1695 MHz band. The framework has established Protection Zones around each NOAA site designated for protection from commercial wireless transmitters that may cause interference or loss of critical data. The framework allows for exclusive commercial operations outside the Protection Zones without coordination. For commercial operations within the Protections Zones coordination with the designated site is required in conjunction with protection criteria of Interference Power Spectral Density (IPSD) limits. Listed in Table 3 are all sites requiring protection and their specified Protection Zone radius.

Note: The max protection distances in Table 3 below are based on a 20 dBm power level. If a different power level(s) is authorized, these distances will have to be adjusted accordingly.

Table 3

Earth Station Name	Owner	Latitude	Longitude	Max Protection distance(km)	EA #
Wallops Island, VA	DOC	375645N	0752745W	30	11
Fairbanks, AK	DOC	644814N	1475234W	20	171
Suitland, MD	DOC	385107N	0765613W	98	11
Suitland, MD	DOC	385107N	0765613W	98	12
Suitland, MD	DOC	385107N	0765613W	98	13
Miami, FL	DOC	254700N	0801900W	51	31
Ford Island, Pearl Harbor HI	DOC	212212N	1575744W	28	172
Monterey, CA	DOC	363600N	1215400W	76	163
Stennis Space Center, MI	DOC	302359N	0893559W	58	82
Stennis Space Center, MI	DOC	302359N	0893559W		83
Barrow, Alaska	DOC	711922N	1563641W	35	171
Boulder, Colorado	DOC	395926N	1051551W	2	141
Fairmont, West Virginia	DOC	392602N	801133W	4	53
Guaynabo, Puerto Rico	DOC/DOI	182526N	660650W	48	174
Kansas City, Missouri	DOC	391640N	943944W	40	99
Norman, Oklahoma	DOC	351052N	972621W	3	125
Greenbelt,MD	DOC	385955N	0765034W	4	13
Barrigada, GU	DOC	132834N	1444816E	4	173
Anchorage AK	DOC	610921N	1495904W	7	171

The FCC plans to auction off spectrum in the 1695- 1710 MHz band using 5 MHz blocks that will be aggregated using Economic Areas (EAs) as the area for geographic licensing. In Table 3 is the list of all affected EAs that were touched or intersected by an earth station's protection zone and the priority ranking of each EA as designated by CSMAC WG 2. In Figure A is a map of the United States and territories with all the Economic Areas, Earth Station sites and protection zone contours.

Figure A