

Houston-Galveston-Brazoria (HGB) Emission Reduction Credits (ERC) and MECT NOx Allowances

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2015 OZONE NAAQS

- On October 1, 2015, the EPA lowered the NAAQS from 75 parts per billion (ppb) to 70 ppb
- By October 1, 2016, each state must recommend designations of attainment, nonattainment, or unclassifiable
- The EPA was expected to make final designations by October 1, ~~2017~~ ~~2018~~ 2017. EPA missed this date then released data on October 31, 2017.

Estimated 2017 Design Values for Texas

Area	2017 Design Value
Houston-Galveston-Brazoria	81
Dallas-Fort Worth	79
San Antonio*	74
El Paso-Juarez*	72
Waco	69
Austin	69
Beaumont-Port Arthur	68
Corpus Christi-Victoria	66
Tyler-Longview-Marshall	65
Lower Rio Grande Valley	57
Laredo	53

* Currently does not have ERC trading program

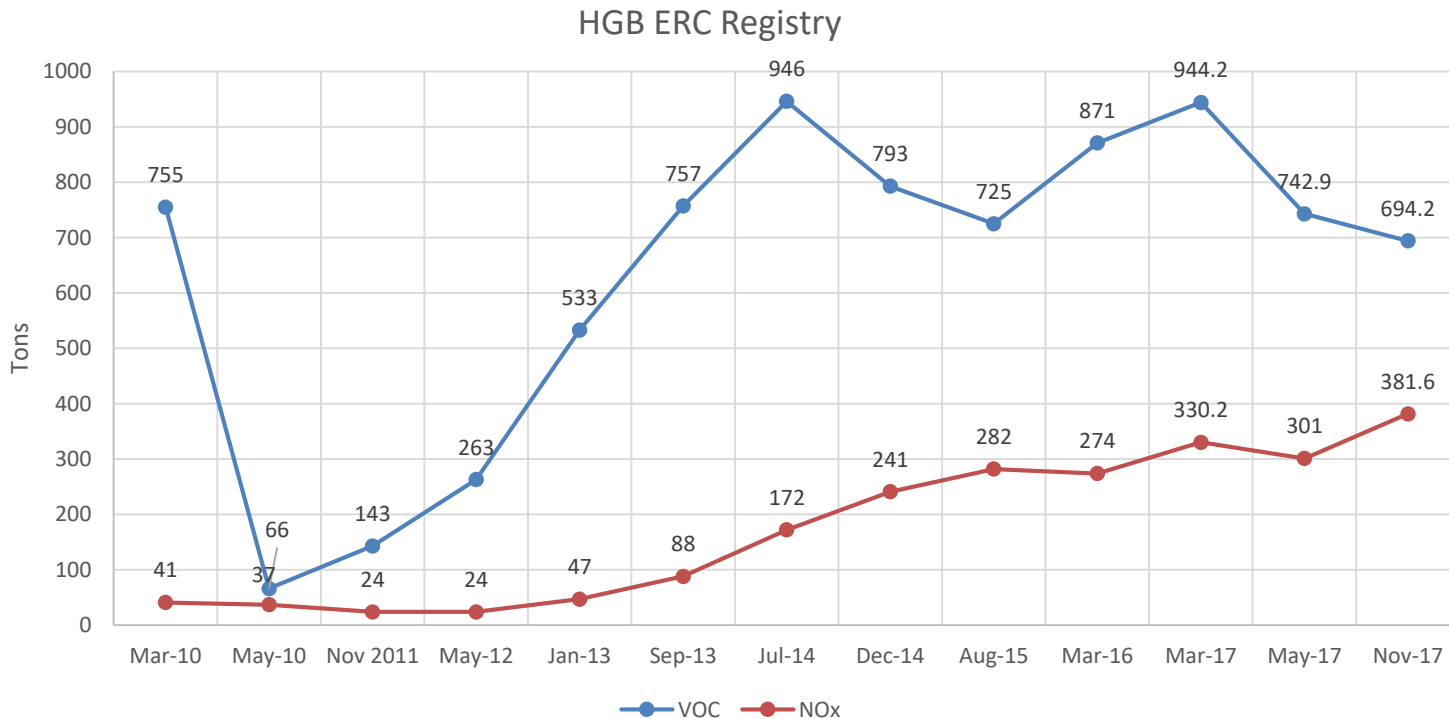
HGB REQUIREMENT TO OFFSET

For NOx and VOC emissions in Houston-Galveston-Brazoria (HGB):

Facility Type	Potential to Emit (PTE)	Offset Ratio	Status
New facility	>= 25 tons	1.3 to 1	Previous – 1997-2016
Major modification	>= 25 tons	1.3 to 1	Previous – 1997-2016
New facility	>=100 tons	1.15 to 1	Current - 2017 redesignation to Moderate
Major modification	>=40 tons	1.15 to 1	Current - 2017 redesignation to Moderate

July 20, 2018 has to obtain 0.075 PPM (2008 Standard) or bumped up to Serious which will increase the offset ratio to 1.2 to 1. As of 2015-2017 Data, Design Value of 81 did not achieve. Drops the new facility threshold to 50 tons and major modification to 25 tons

HGB NOX & VOC ERC REGISTRY



Pending NOx banking ton applications - 180+ tons
Pending VOC banking ton applications - 450+ tons

NOx expiring by the end of 2018 – 138 tons (36%)
VOCs expiring by the end of 2018 – 39 tons (~5%)

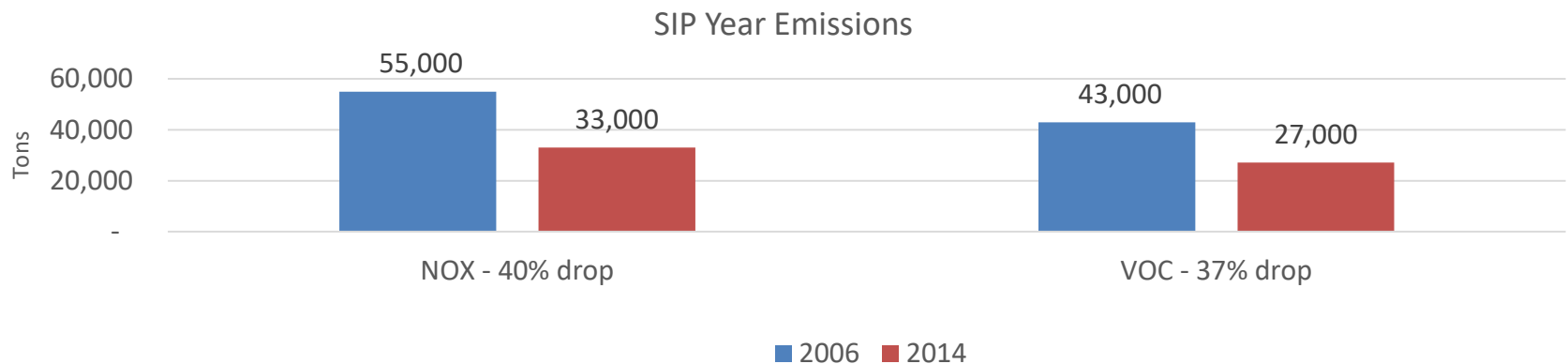
SIP YEAR FOR CHANGING ERCs BANKING

- Prior to September 26th, 2016 - 2006 is SIP year for non-EGUs entities generating ERCs.
- After September 26th, 2016 – 2014 is SIP year for non-EGUs entities generating ERCs.
- There is approximately 35%-40% drop in VOC and NOx emissions from 2006 to 2014
- Had Material Affect on Number of Banking Applications

SIP CHANGE AFFECT ON HOUSTON-GALVESTON BRAZORIA ERC PROGRAM

- Pending Banking Applications

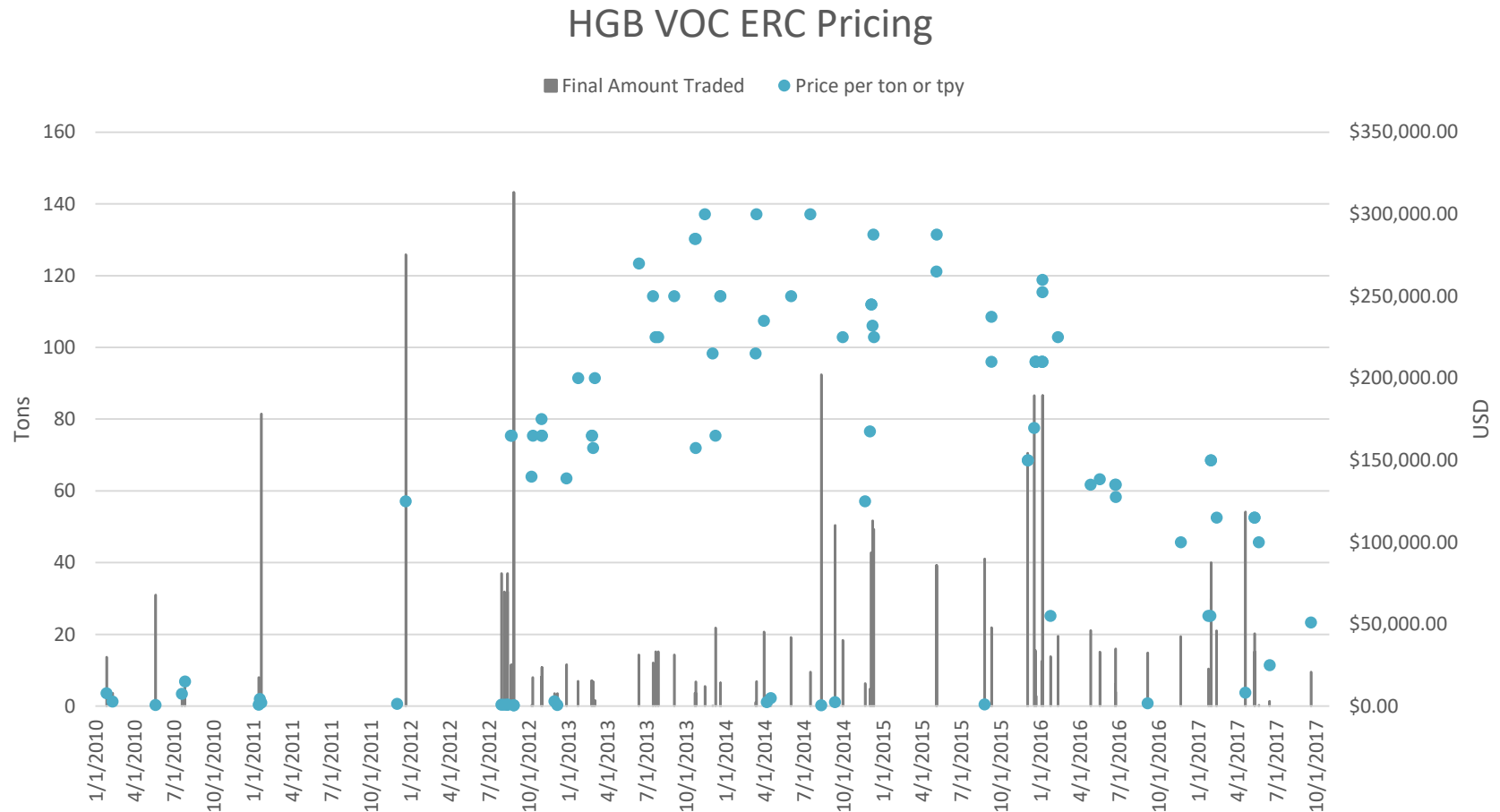
	Applications pre 9/23/16	Applications post 9/23/16	Change
Nox	10	22	12
VOC	37	72	35
Total	47	94	100%



HGB AREA AND MOBILE SOURCES

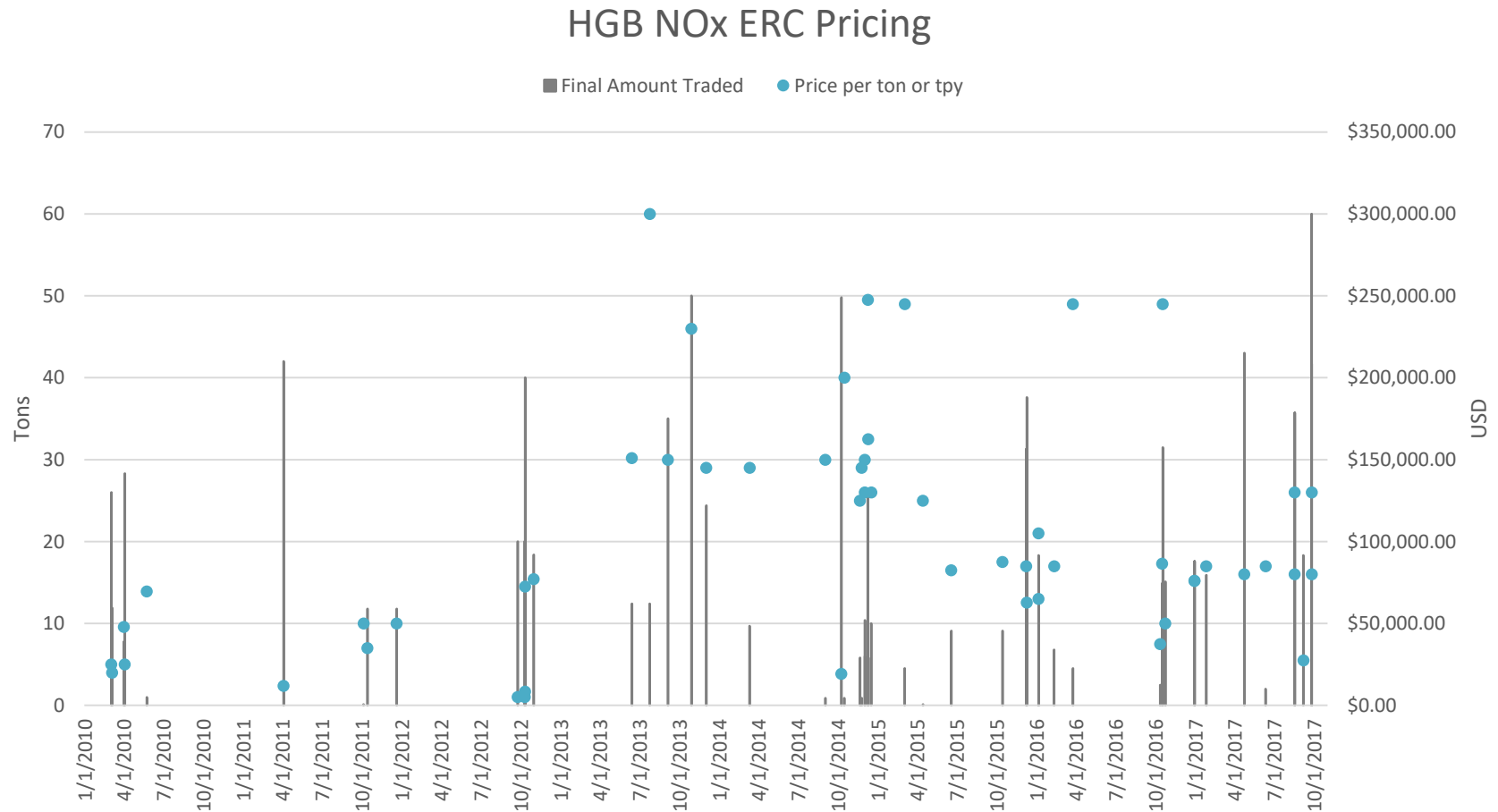
- TCEQ amended EBT rules effective Oct 12, 2017 so that ERCs could be generated by area and mobile sources
- These emissions do not have to be in the SIP (major change)
- Area Sources:
 - Inelastic sources not eligible – gas stations, restaurants, etc.
 - 61% of VOC emissions in 2014
- Mobile Sources
 - on-road mobile sources that are part of industrial, commercial, non-profit, institutional or municipal fleet and operate 75% of the time in the non-attainment area are eligible to generate
 - No residential sources
 - 67% of NO_x emissions from Mobile Sources
- Multiple sources can be aggregated to meet 0.1 ton ERC min issuance

VOC ERC Pricing and Volumes 2010-Present



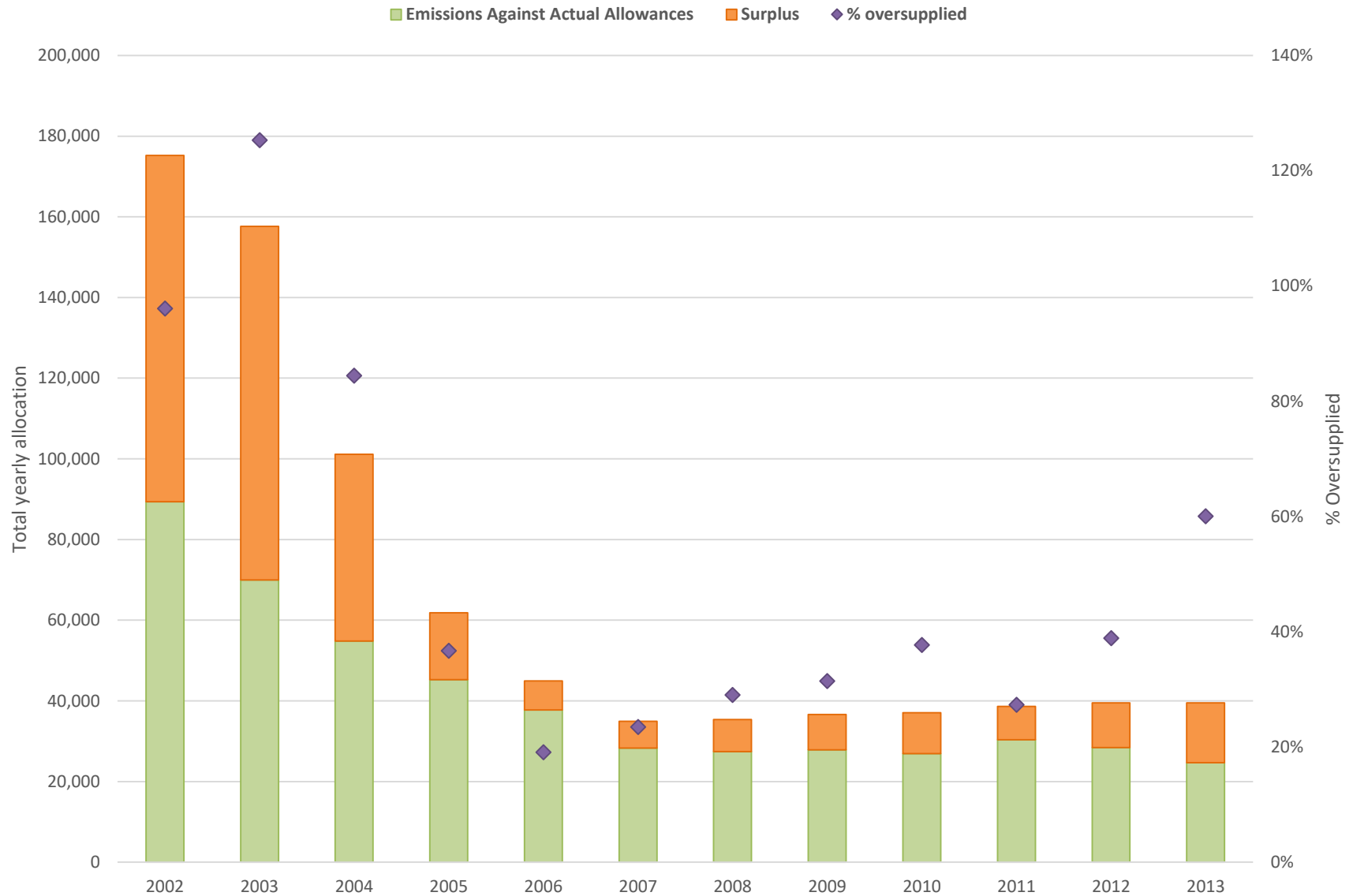
Includes: VOC trades done on forwards, VOC trades by motivated sellers, and VOC trades with near term expiration dates

NOx ERC Pricing and Volumes 2010-Present

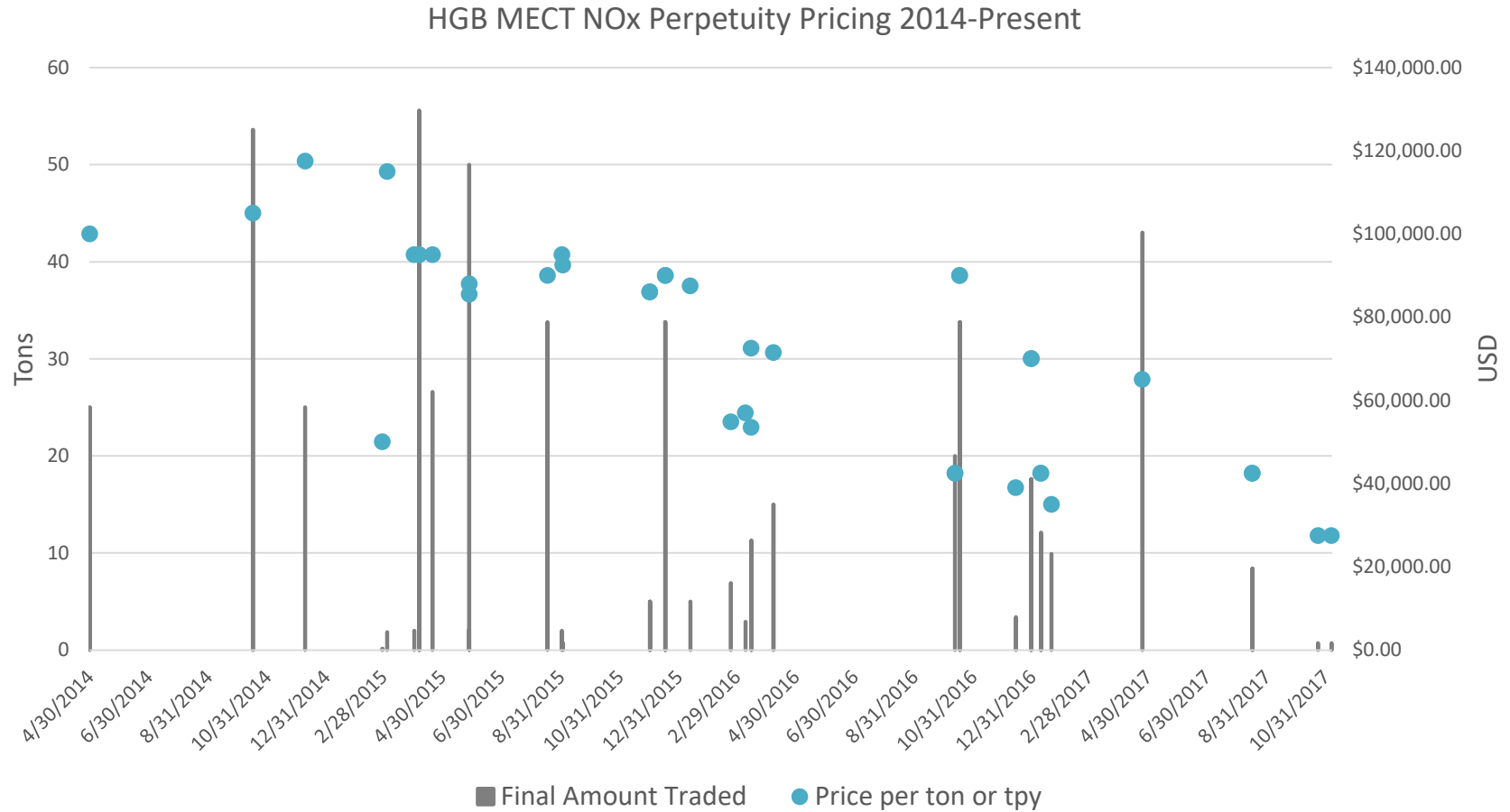


Includes: NOx ERCs used for VOC, NOx ERCs from motivated sellers, and NOx ERCs priced off MECT NOx for conversion with TCEQ

HGB MECT NO_x SUPPLY vs. DEMAND



HGB MECT NOx Pricing



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