Update on Scarcity of Houston-Galveston-Brazoria (HGB) Emission Reduction Credits (ERCs) and Allowances, and use of NOx ERCs for VOC ERCs

September 9, 2014

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Launched in 2005, Element Markets has become the leading marketer of environmental commodities in the U.S.

- Leading marketer of environmental commodities with a focus on Emissions, GHG, and Renewable Energy (Energy and Transportation Credits), and Biomethane
- Over $1.6 Billion in environmental commodities transacted since inception in 2005
- Environmental Asset Management Services for over 8,000 MW of generation
- Customer base of over 700 companies within the environmental markets
- Leading broker in the Texas market for over 8 years

**Business Units**

- **Renewable Energy Group**
  - Biogas Development
  - Credit Marketing

- **Greenhouse Gas (GHG) and Emissions Services**
  - GHG Offset Projects
  - Credit Marketing
TEXAS NONATTAINMENT AREAS

Dallas-Fort Worth, Texas

Houston-Galveston-Brazoria (HGB), Texas

8-hour Ozone Nonattainment Areas

2008 8-hour Ozone Nonattainment Areas
as of July 2nd, 2014

- Extreme
- Severe 15
- Serious
- Moderate
- Marginal

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

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Potential to Emit (PTE)</th>
<th>Required to Offset</th>
</tr>
</thead>
<tbody>
<tr>
<td>New facility</td>
<td>&gt; 25 tons</td>
<td>All emissions (to zero)</td>
</tr>
<tr>
<td>Major modification</td>
<td>&gt; 25 tons</td>
<td>All emissions (to zero)</td>
</tr>
</tbody>
</table>

Facilities with NOx PTE > 10 tons are included in the MECT NOx program

**Example. New facility with PTE > 25**

\[
\text{PTE} \times 1.3 = \text{ERCs Required}
\]

<table>
<thead>
<tr>
<th>PTE</th>
<th>Required to Offset</th>
<th>ERCs Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>100</td>
<td>130</td>
</tr>
<tr>
<td></td>
<td>x 1.3 = 25</td>
<td></td>
</tr>
</tbody>
</table>

\[100 \times 1.3 = 130\]
HGB EMISSION REDUCTION CREDITS & ALLOWANCES

- **ERCs**
  - One-time purchase/offset potential to emit
  - Perpetual right to operate under air permit
  - Expires after 5 years if not applied to permit
  - ERCs are created upon shutdown, process change, or installed control technology

- **MECT/HRVOC Allowances**
  - Annual Program
  - Compliance each year
  - Can sell excess or buy shortfall
  - Supply of Allowances is capped and usually reduced over time
  - Allowances allocated at start of program from a historical baseline
  - New facilities do not receive allocation, but must buy in the marketplace
HGB EMISSIONS CAP & TRADE PROGRAMS

MECT NOx: Trades in MECT NOx Allowances represented in tons/year

- Implemented in HGB in 2002
- Initial allocations based on 1997-1999 baseline, declining to 80% reduction by 2008

HRVOC: Trades in HRVOC Allowances represented in tons/year

- Initial cap of 3,451.5 tons
  - 25% cap reduction between 2014 and 2017

Transaction types:

- **Stream (Perpetuity):** Good for the life of the program
- **Current:** Good for the current and next compliance year
- **Vintage:** Good for the year immediately following the credit’s vintage year
Surge in project development in HGB over last 2 years

Prices of emission credits and allowances have increased significantly

- For example: VOC Emission Reduction Credits have increased in price by over 6,000% since the start of 2011
HGB ERC VOLUME SINCE 2010

Total HGB ERCs on Registry

Date | Total VOC (tons) | Total NOx (tons)
--- | --- | ---
3/23/2010 | 755.90 | 41.50
4/27/2010 | 66.20 | 37.90
11/29/2011 | 143.10 | 24.30
4/26/2012 | 263.60 | 24.30
8/3/2012 | 299.70 | 24.30
6/15/2012 | 263.60 | 24.30
8/3/2012 | 299.70 | 24.30
11/7/2012 | 295.50 | 37.20
1/3/2013 | 533.40 | 47.30
2/4/2013 | 547.50 | 47.30
9/17/2013 | 757.90 | 88.50
11/7/2013 | 749.70 | 141.10
1/14/2014 | 756.20 | 142.00
3/17/2014 | 764.20 | 155.90
7/1/2014 | 946.50 | 172.70
8/21/2014 | 937.60 | 168.60
9/9/2014 | 937.60 | 168.60
Stats on HGB NOx and VOC Registry

- High majority of ERCs on the registry are held by companies with announced projects

  - 136 tons of VOC ERCs reach their expiration date by November 15th, 2014

  - VOC ERCs on registry held by 11 distinct companies, of which 4 hold 83%

  - NOx ERCs on registry held by 8 distinct companies, of which 2 hold 70%
**ERC GENERATION - PERMANENT REDUCTION IN VOC OR NOx EMISSIONS**

- Emissions must have been reported or represented in inventory used for SIP determinations
- For a permanent shutdown, the entire permit must be voided
- To apply for certification, applicants must submit Form EC-1
- Once approved, TCEQ will list on the Emission Reduction Credit Registry
- Reductions must be reviewed and approved by TCEQ
- Once certified, ERCs are available for trade or use
CREATE NOx ERCs AND SURRENDER MECT NOx

- Process for surrender of MECT NOx and creation of NOx ERCs:
  - Surrender Permits
  - Turn in EC-1 within 180 days of implementation of reduction strategy
  - TCEQ reviews the EC-1 form
  - Once TCEQ verifies the ERC generation amount
  - TCEQ requests an equal amount of the stream trade (surrender)
  - After stream trade is complete, TCEQ issues the NOx ERCs.

An entity is able buy or swap for any MECT allowance to be surrendered if they are not in held by entity.
**Offsetting VOC in HGB**

- Provide HGB VOC ERCs
  - Historical Route

- Provide HGB VOC DERCs for every year of operation
  - Limited due to Supply of VOC DERCs

- Provide HGB NOx DERCs for every year of operation
  - Modeling, EPA and TCEQ approval

- Provide HGB NOx ERCs
  - Modeling, EPA and TCEQ approval

- Provide DFW VOC ERCs
  - Modeling, EPA and TCEQ approval
Offsetting NOx in HGB

- NOx ERCs
  - Historical Route

- NOx DERCs

- MECT NOx Allowances
  - Preferred Route as allows the 1:1 to offset both NSR permit and Annual Compliance with MECT
# VALUE OF NOx ERCs VERSUS MECT NOx

<table>
<thead>
<tr>
<th></th>
<th>NOx ERCs</th>
<th>MECT NOx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offset NOx for NSR (air permit)</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Compliance with Annual MECT NOx</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usable in lieu of VOC ERCs</td>
<td>YES (with air modeling</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>and TCEQ and EPA approval)</td>
<td></td>
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</tbody>
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“US Emissions House of the Year”, 2014 and 2010 by Energy Risk

Energy Risk Environmental Rankings
- #1 U.S. Regional Greenhouse Gas Dealer
- #1 U.S. Voluntary GHG Credit Dealer
- #2 Renewable Energy Credit Dealer
  - #1 NOx & SO₂ Dealer

Environmental Finance Magazine
- Best Trading Company in North American Renewable Energy
- Runner-Up, Best Trading Company of North American GHG Markets (California)
  - Best Trading NOx & SO₂ Company Emission Credits