Influence of Risk on Transaction Costs in WQT Markets
Risks influencing transaction costs

- Scientific and Biophysical Uncertainty
- Extreme Events
- Buyer Risk
- Market Risk
- Regulatory Risk
Uncertainty as to how activities on the land, like agricultural practices, perform given natural variations in weather, soil, topography, etc.

Uncertainty regarding our ability to accurately predict and estimate the performance of conservation practices.
MECHANISMS TO ADDRESS UNCERTAINTY

• Direct measurement
• Estimation tools/models & BMP effectiveness rates
• Fixed values
• Trade ratios
Uncertainty associated with extreme or stochastic events that can lead to failure of nonpoint source control measures
MECHANISMS TO ADDRESS UNCERTAINTY

- Aggregators
- Centralized Credit Reserve

### Credit Calculation

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen Reductions to Edge of Watershed Segment:</td>
<td>654.48 lbs/yr</td>
</tr>
<tr>
<td>Delivery Ratio:</td>
<td>0.73</td>
</tr>
<tr>
<td>Nitrogen Reductions to Chesapeake Bay:</td>
<td>479.74 lbs/yr</td>
</tr>
<tr>
<td>Credits Retired to Meet the Threshold:</td>
<td>0%</td>
</tr>
<tr>
<td>Total Credits Generated:</td>
<td>480 Credits/Year</td>
</tr>
<tr>
<td>Credits sent to DEP Reserve:</td>
<td>10%</td>
</tr>
<tr>
<td>Total Credits Available to Trade:</td>
<td>432 Credits/Year</td>
</tr>
</tbody>
</table>

Ex. Pennsylvania pools 10% of all credits into a centralized insurance reserve that can be used for compliance purposes in case of project failure.
Buyer Risk

Risk that the credit buyer will be in noncompliance as a result of a credit seller not abiding by the agreement to implement and maintain the conservation practice as planned.
MECHANISMS TO ADDRESS UNCERTAINTY

- Aggregators
- Verification
- Shared liability
Market Uncertainty

Uncertainty that there will be adequate supply and/or demand for credits.
MECHANISMS TO ADDRESS UNCERTAINTY

- Preimplementation certification
- Credit banks
- Government guarantee

Ex. Ohio River Basin project purchases credits from producers. Credits are aggregated into a bank and re-sold to third parties.
Regulatory Uncertainty

Uncertainty around whether regulations will change or be challenged, or if permit requirements or credit calculations can be subject to change.
MECHANISMS TO ADDRESS UNCERTAINTY

- Program conservatism
  - Trading ratios
  - Verification requirements
- Ag certainty
- Grandfathering

Source: Bay Journal. April 2013
Conclusions

• Risk and Uncertainty should be addressed holistically

• Be aware of trade-offs between addressing risk and uncertainty and increasing transaction costs
Thank You!

Questions?
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