Connecticut Department of Energy and Environmental Protection
Connecticut’s Nitrogen Trading Program

November 8, 2018
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ACWA Nutrients Permitting Workshop

Connecticut Department of Energy and Environmental Protection
Connecticut’s Nitrogen Trading Program

- The Long Island Sound TMDL
- The General Permit
- Trading
The Long Island Sound TMDL

  - Revised 2000
- EPA reviewed and approved - 2001
- In-basin Nitrogen Reduction Goal
  - 58.5%
  - 63.5% in point source reductions in Connecticut
- Enforceable Schedule – final reductions due 2014
- Allows for Trading between POTWs
General Permit for Nitrogen Discharges

- Public Act 01-180, An Act Concerning Nitrogen Reduction In Long Island Sound – GP authority
- First issued January 1, 2002
- Latest renewal effective January 1, 2019
- Lists WLA for all 79 point sources covered
- Authorizes the discharge of Total Nitrogen
- Requires operation of installed processes
- Allows for trading to meet limits
General Permit for Nitrogen Discharges

- Set limits from TMDL stepping down until 2014
- Set frequency of monitoring:
  - Total Nitrogen Concentration
  - POTWs Less Than 10 MGD Design - Weekly
  - POTWs Greater Than 10 MGD Design - Twice per Week
  - Average Flow - Daily
  - Sample Location - Final Effluent
  - Sample Type - Daily Composite
<table>
<thead>
<tr>
<th>EQ factor</th>
<th>Facility Name</th>
<th>Baseline End-of-Pipe (lbs/day)</th>
<th>WLA End-of-Pipe (lbs/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.14</td>
<td>Thompson</td>
<td>28</td>
<td>10</td>
</tr>
<tr>
<td>0.20</td>
<td>MDC Hartford</td>
<td>6512</td>
<td>2377</td>
</tr>
<tr>
<td>0.49</td>
<td>Meriden</td>
<td>1230</td>
<td>449</td>
</tr>
<tr>
<td>0.67</td>
<td>Stratford</td>
<td>974</td>
<td>356</td>
</tr>
<tr>
<td>0.85</td>
<td>Fairfield</td>
<td>1113</td>
<td>406</td>
</tr>
<tr>
<td>1</td>
<td>Norwalk</td>
<td>1967</td>
<td>718</td>
</tr>
<tr>
<td>Trading Fundamentals</td>
<td>Point Source</td>
<td>Non-Point Source</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------------</td>
<td>--------------</td>
<td>------------------</td>
<td></td>
</tr>
<tr>
<td>Common water quality problem</td>
<td>YES</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Technically feasible to meet pollutant reduction target</td>
<td>YES</td>
<td>UNCERTAIN</td>
<td></td>
</tr>
<tr>
<td>Compelling member benefits, especially economic</td>
<td>YES</td>
<td>PS to NPS/SW</td>
<td></td>
</tr>
<tr>
<td>Ability to quantify and track pollutant loads</td>
<td>YES</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Credit costs based upon agreed protocols</td>
<td>YES</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Diverse market, viable supply and demand</td>
<td>YES</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Reduce overall cost</td>
<td>YES</td>
<td>PS to NPS/SW</td>
<td></td>
</tr>
<tr>
<td>Transaction costs low relative to price</td>
<td>YES</td>
<td>NO</td>
<td></td>
</tr>
</tbody>
</table>
Connecticut’s Nitrogen Trading Program

- Governed by the General Permit
- Public Act 01-180, An Act Concerning Nitrogen Reduction In Long Island Sound – Establishes NCAB
- Incentive Based – Not Free Market
- Managed by Nitrogen Control Advisory Board (NCAB)
- NCAB Sets Credit Prices Based on Set Formula
  — Annual CWF Project Capital Costs and Annual O&M Costs
- Scheduled Annual Trades
- Transactions through the State “Bank”
Goals of the Trading Program in 2002

Meet the TMDL by 2014 cost-effectively by

– Encouraging denitrification at STPs - grants
– Spreading out upgrades over thirteen years
  ▪ Western and larger facilities expected first
– Efficiently using funding and resources
STP Nitrogen Baseline Loads

Distribution of 79 Connecticut STPs participating in nitrogen trading. Dots are proportional to baseline, end of pipe nitrogen loads (lbs/day).
## Connecticut’s Nitrogen Trading Program

<table>
<thead>
<tr>
<th>Town WPCF</th>
<th>EQ Factor</th>
<th>EOP Limit</th>
<th>Actual Effluent TN/day</th>
<th>$/lb of TN</th>
<th>Total Annual Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meriden</td>
<td>0.49</td>
<td>449</td>
<td>98</td>
<td>$2.59</td>
<td>$162,547</td>
</tr>
<tr>
<td>Vernon</td>
<td>0.19</td>
<td>184</td>
<td>529</td>
<td>$6.61</td>
<td>$158,149</td>
</tr>
</tbody>
</table>
Trading Program Accomplishments

• Cost-effective implementation of the TMDL
  – (cost savings of $400 – 500 million)

• 61 facility upgrades
  – $450 million invested in CWF project facilities to remove TN

• Compliance with the TMDL in 2013
Trading Program Accomplishments

Number of upgrades

- Project Facilities
- Non Project Facilities

Yearly Accomplishments:
- 2002: 50
- 2003: 60
- 2004: 50
- 2005: 40
- 2006: 30
- 2007: 20
- 2008: 10
- 2009: 0
- 2010: 10
- 2011: 20
- 2012: 30
- 2013: 40
- 2014: 50
- 2015: 60
- 2016: 70
- 2017: 80
- 2018: 90

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Trading Program Accomplishments

Price of Nitrogen Credits

* In 2016 – the price of a credit for sellers is $2.66

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Trading Program Accomplishments

2018 – 2022 Nitrogen Upgrades:

• Under Construction
  – Farmington
  – Middletown Abandonment
  – Torrington
  – Killingly

• Under Design
  – Ridgefield
  – Vernon

• In Planning
  – Wallingford
  – Fairfield
  – Norwich
  – Plainfield
  – Sprague
Changes to the Trading Program

• Continue to maintain compliance with TMDL
  – Encourage optimized denitrification at WWTPs
  – Continue efficient use of resources & funding
  – Continue support of data collection

• Continue utilization of General Permit
  – Renewal effective January 1, 2019

• Maintain Options for future TMDL compliance
  – Continue to incentivize upgrades

• Moving the trading program to self-sufficiency
Changes to the Trading Program

2015

- Buyer's credits needed
- Sellers's credits available
- Trading account subsidy

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Changes to the Trading Program

Impact on Program

- $3,000,000
- $1,000,000
- $100,000
- $0
- $100,000
- $300,000
- $500,000
- $700,000

Changes to the Trading Program

Self-sufficient scenarios evaluated

• Discontinue the trading program
• Drop low producing sellers
• Drop inefficient sellers
• Buyers buy all of the credits produced
• Buyers buy the credits they need to meet their General Permit limit and those payments are shared by the sellers
Changes to the Trading Program

Public Act 15-38

- Implemented the following scenario:
  - Buyers buy the credits they need to meet their General Permit limit and those payments are shared by the sellers
Trading Program Accomplishments

August 1 - August 4, 1994

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Trading Program Accomplishments

Connecticut Department of Energy and Environmental Protection

Connecticut Fund for the Environment
Save the Sound®

Connecticut Department of Energy and Environmental Protection
Next steps

• Changes to the TMDL
• Public participation
Questions?

www.ct.gov/deep/municipalwastewater

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