Perspective and Engagement of Dairy Industry on Water Quality Trading Markets

December 8, 2014
Who are we?

- 32 Milk Co-ops owned by over 32,000 dairy farmers
- Represent farmers of all sizes in all 50 states
- Farmers produce the milk, and co-ops market the milk by processing the milk, selling the milk or shipping the product overseas
- Largest dairy states are California, Wisconsin, Idaho, New York and Pennsylvania
## Annual Dairy Cow Nutrient Production

<table>
<thead>
<tr>
<th>Size lb.</th>
<th>N lb/yr</th>
<th>P$_2$O$_5$ lb/yr</th>
<th>K$_2$O lb/yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>22</td>
<td>9.1</td>
<td>18</td>
</tr>
<tr>
<td>250</td>
<td>37</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>500</td>
<td>75</td>
<td>30</td>
<td>59</td>
</tr>
<tr>
<td>1,000</td>
<td>150</td>
<td>61</td>
<td>119</td>
</tr>
<tr>
<td>1,400</td>
<td>210</td>
<td>84</td>
<td>166</td>
</tr>
</tbody>
</table>
Why We Started The Energy And Nutrient Recovery Effort

Current State

- Increasing regulatory and societal pressure about manure management resulting in litigious environment
- Wet or dry manure applied untreated with air and water emissions
- Timing of manure application is not best for crop uptake

Desired State

- Prevent costly, burdensome regulation and litigation
- Realized economic benefit from voluntary action
- Dairy farm helps resolve societal issues related to air and water pollution and GHG emissions
- Improved social license to operate and increased consumer trust
Opportunities - I

- Potential High – 11.7 Million MWH/year; value of $894 Million
- Proven commercial digester technology exists
  - But conventional lending difficult to obtain, and
  - Power Purchase Agreements yield low prices
- Suite of new funding programs becoming available which enhance economics:
  - USDA Rural Utility Service (RUS) Energy Efficiency and Conservation Loan Program (EECLP) – FY 2014 $250M
  - RUS Water and Wastewater Disposal Loans

(1) Informa Economics 2013
Opportunities - II

- Strategic opportunities look promising with:
  - Utility Companies (G&T’s)
  - Rural Electrical Co-ops
  - NACWA
  - WWTPs
- Securing funding alternatives will create opportunity to launch starter market → enables scale and incentive to develop nutrient recovery technology
- Nutrient trading concept gaining traction → will create incentives and additional value for digester projects
- Solar has a real potential to significantly reduce power costs for all producers -- large and small
The Vision

- Creating a business co-op would
  - help to facilitate nutrient trading
  - enhance digester and nutrient recovery technology
  - provide needed environmental services to dairy producer co-ops
- Initial projects are underway in each area.
- Envision pursuing any and all technologies across the United States that deliver benefits to dairy producers
- Ultimately the business entity can
  - act as a repository for knowledge and expertise
  - assist large and small cooperatives who would like to pursue new and unique opportunities
Environmental Issues Committee Recommendation

“The National Milk Producers Federation should help develop and support a business entity to assist dairy cooperatives in providing Energy & Environmental Services for dairy producers to support the voluntary production of environmental benefits through market-based incentives. This Energy & Environmental Services business entity should be built upon the developments from the Strategic Partnerships, learnings from the Pilot Projects, and other cooperative and business considerations. The Energy & Environmental Services business entity will have defined ownership opportunities for those cooperatives that finance its development.”
Other Possibilities

- Solar power can work on farms of all sizes and also works well when combined with methane digesters
- New lagoon filter technology
- Free-standing livestock waste treatment systems
- Conservation tillage, filter strips, cover crops and 4R principles can also increase water quality production on dairy farms
- Energy efficiency measures on farms hold large GHG reduction potential