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Nitrogen Management Project Protocol V2.0

Public Comment Webinar

August 15, 2018

This work supported in part through a grant from the USDA Natural Resources Conservation Service, Agreement Number 69-3A75-16-016.

Agenda



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Background

Introduce NMPP v2.0

Highlight key updates from v1.1

Questions

Next Steps

Reserve Staff



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- Protocol development lead

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- Assist with protocol development



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Section 1

BACKGROUND

- **June 2012:** NMPP v1.0 adopted
- **January 2013:** NMPP v1.1 released (current version)
 - Uses a modified version of the MSU-EPRI empirical emission factor-based methodology for nitrogen rate (N rate) reductions
 - Applicable only to N rate reductions on Corn in the Corn Belt (12 States)
 - No projects have been registered to date
- **Currently:** Finalizing significant v2.0 update (EDF-led CIG)
 - Expanded applicability (i.e., additional regions/crops/activities)
 - Improved protocol elements (e.g., additionality criteria) and usability
 - New standardized quantification methodology

NMPP v2.0 Update Timeline



Milestone/Task	Timeline
Technical Contractor began work	Aug 1, 2017
Staff work with contractor	Aug 2017 – Aug 2018
1 st WG meeting (webinar) – technical elements	Aug 29, 2017
Staff protocol drafting	Sep 2017 – Jul 2018
2 nd WG meeting (webinar) – quantification methodology (QM)	Oct 10, 2017
3 rd WG meeting (webinar) – QM	Dec 12, 2017
Draft protocol to Workgroup	Jun 14, 2018
4 th WG meeting (webinar) - draft protocol sections	Jun 20, 2018
WG comment on draft protocol; Reserve revised protocol	Jun – Jul 2018
30-day Public Comment Period	Aug 2018
Produce “Board-ready” protocol	Sep 2018
Final protocol adoption by Reserve Board	Oct 17, 2018

Summary of Changes from V1.1 to V2.0

Protocol Element	V1.1	V2.0
Practices	Synthetic N Rate Reductions	Synthetic N Rate Reductions; Nitrification inhibitor or Slow-release fertilizer; Long-Term No-Till (under consideration)
Crops	Corn (grain + silage)	Corn (grain + silage), Barley, Cotton, Oats, Sorghum (grain), Spring Wheat, Winter Wheat, Tomatoes
Regions	U.S. North Central Region	Contiguous U.S. 48 States (pending data availability for additionality tests and capabilities of quantification methodology)
Project Size	1 Field	1 or More Fields
Aggregation	More than 1 field; field size limits; aggregate size distinctions	Can aggregate multiple fields / farmers into single project AND / OR multiple projects can combine into cooperative for joint MRV
Ownership Structure	Single field – simple ownership	Can be multiple owners / managers – must nominate single project developer
Irrigation	Emergency-Only	Allowed; SSR 4 included in GHG Assessment Boundary
Start Date	6 months prior to submission	12 months prior to submission

Summary of Changes from V1.1 to V2.0

Protocol Element	V1.1	V2.0
Initial Reporting Period	1 cultivation year	1-2 cultivation years
Crediting Period	5 reporting periods	10 reporting periods
Performance Standard Test	Annual State Average Removed to Applied (RTA) Benchmark; Average Historical Yield	Multi-year County Average Partial Factor Productivity (PFP) Benchmark; Project Yield
Baseline	5-year lookback period; historical records only	3-year lookback period; hierarchical approaches: 1) historical records, 2) agronomic guidance, 3) county average
N ₂ O Emissions Quantification	MSU-EPRI Methodology	Nitrogen Management Quantification Tool (Emission factor-based Excel tool)
Leakage	Proportionate Increase in Emissions	Proportionate Increase in Project N Rates
Monitoring	Corn Stalk Nitrate Test (CSNT)	Removed CSNT – same annual Project Monitoring Plan & Report required
Verification	CSNT-informed	Risk – random sampling based verification scheduling



Section 2

PROJECT DEFINITIONS

NM Project Objective & Definition (Section 2.2)

Objective: To reduce N₂O emissions by adopting best management practices (BMPs) that further improve nitrogen use efficiency (NUE) and enhance crop N uptake, beyond what is projected to happen in the future, absent a carbon market

Definition: The adoption and maintenance of one or more *eligible project activities* during the cultivation year of an *eligible crop*, on one or more fields in an *eligible project area*, that reduce N₂O emissions

Eligible Project Activities (Section 2.2.1)

Synthetic N Rate Reductions

– *and* –

New for v2.0:

- Use of Nitrification Inhibitors (NIs)

– *or* –

- Switch to Slow Release Fertilizers (SRFs)

Eligible Crops (Section 2.2.2)



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Corn (Grain + Silage)

New for v2.0:

- Barley, Cotton, Oats, Sorghum (Grain), Spring Wheat (w/ or w/o Durum), Tomatoes (Processing), & Winter Wheat
- Default baseline yield option for new crops grown in project
- *Baseline crop compared to same crop in project*

Eligible Regions (Section 2.2.3)



CROP	STATE
Barley	AZ, CA, CO, ID, MN, MT, ND, OR, PA, VA, WA, WY
Corn (Grain)	CO, GA, IL, IN, IA, KS, KY, MI, MN, MO, NE, NY, NC, ND, OH, PA, SD, TX, WI
Corn (Silage)	TO BE UPDATED ONCE MODELING IS COMPLETE
Cotton	AR, GA, MS, MO, NC, TN, TX
Oats	IL, IA, KS, MI, MN, NE, NY, ND, OH, PA, SD, TX, WI
Sorghum (Grain)	CO, KS, NE, OK, SD, TX
Spring Wheat (Durum)	MT, ND
Spring Wheat (excluding Durum)	MN, MT, ND, SD
Tomatoes (Processing)	CA
Winter Wheat	CO, ID, IL, KS, MO, MT, NE, OH, OK, OR, SD, TX, WA

Other Activities



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Organic N amendments

NM BMPs

New for v2.0:

- Irrigation
- Tillage

Ineligible Scenarios:

- Combinations with switch to short-term (<10 years) no till



New for v2.0:

- Multiple fields may be managed together under a single project, across multiple owners and multiple regions
- Multiple projects may also be managed together as a “project cooperative” or “cooperative”
- Single entity to manage all aspects of project development (submittal, reporting and verification)



Section 3

ELIGIBILITY RULES



Start Date / Reporting Period / Crediting Period

- 1st day of the cultivation year of an eligible crop, on an eligible field in which eligible activities are implemented
 - day 1 after the field's previous harvest was completed
 - SUBMITTAL deadline
 - 1st field in project = 12 months
 - All other fields = 24 months
- Crediting period = 10 Reporting periods – can be renewed
- Reporting period flexibility
 - Flexible options to forgo crediting for given field / cult. year



The performance standard test (PST) (Section 3.5.1)

- N rate reductions (next slide)
- *New for v2.0: Use of NIs or switch to SRFs*
 - Additional when applied in combination with N rate reduction
 - Field ineligible if applied in baseline

The legal requirement test (Section 3.5.2)

- Adoption of eligible NM activities in excess of legal mandates

The credit/payment stacking test (Section 3.5.3)

- If not receiving credits or payments for eligible NM activities

PST – N Rate Reductions (Section 3.5.1.1)

New for v2.0:

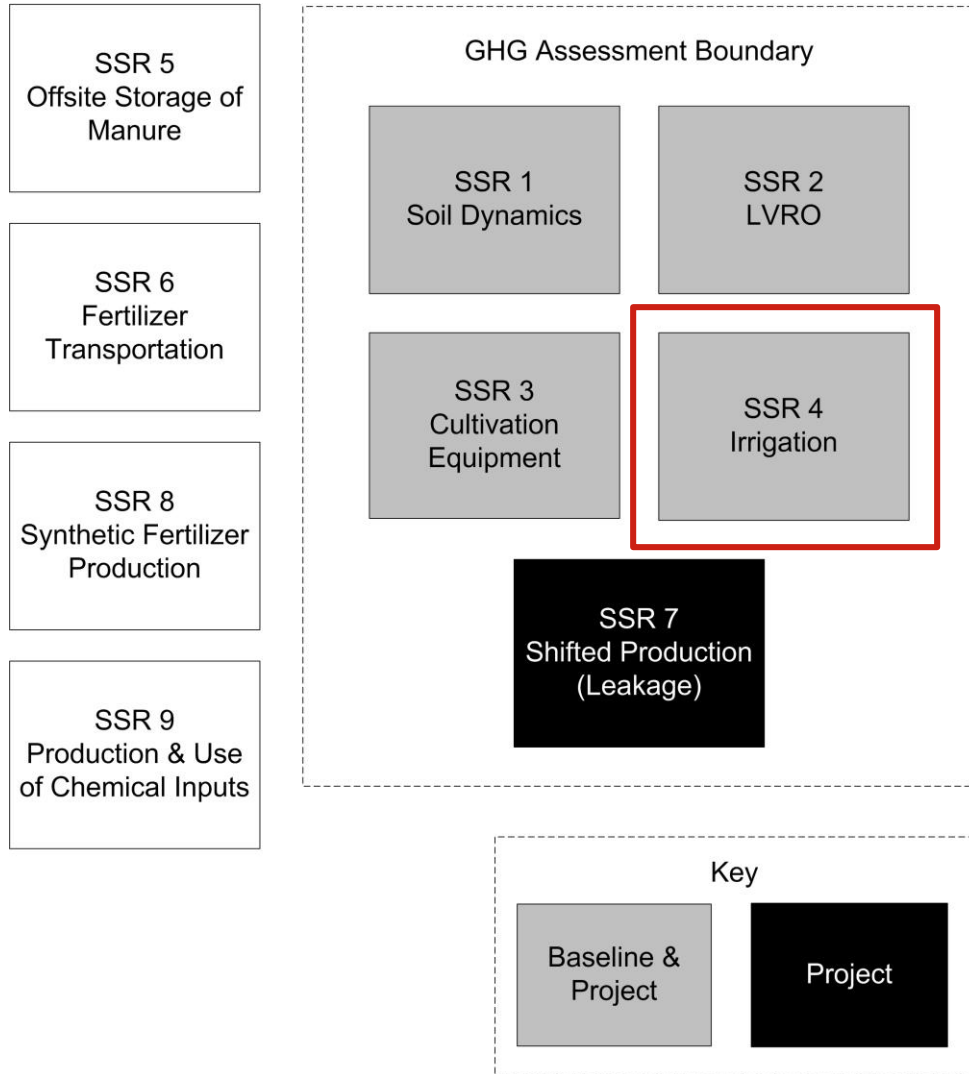
- Based on NUE metric – “partial factor productivity (PFP)”
 - $PFP = \text{Annual Crop Yield} / \text{Total Annual N Rate (syn + org)}$
- Field’s RP PFP must exceed the 3-year, county- and crop-specific average PFP benchmark (Appendix C)
 - $PFP_{P,f} > PFP_{avg,Co,c}$
 - Must pass each RP to be eligible for CRTs
- PFP benchmarks found in NMPCBLT



Section 4

GHG ASSESSMENT BOUNDARY

GHG Assessment Boundary



Direct and indirect N₂O emission reductions (SSR1 and SSR2)

- LVRO = leaching, volatilization and runoff

CO₂ emissions from equipment use changes for cultivation (SSR3) and irrigation (SSR4 – *New for v2.0*)

Market leakage (SSR7) must be estimated if yields go down; results in increased project synthetic N rate



Section 5

QUANTIFICATION METHODOLOGY



Quantifying GHG Emission Reductions

$$ER = (PER_{syn} - PE_{org}) - SE$$

- **ER** = total emission reductions
 - PE = primary effect; SE = secondary effect
- **PER_{syn}** = N₂O ERs from implementation of eligible activities
 - Calculated using NMQuanTool
- **PE_{org}** = N₂O emissions from increases in organic N rate
 - Organic N rate may increase, but Total N rate must still decline
- **SE** = CO₂ emissions from increases in fossil fuel use
 - Can be qualitatively or quantitatively proven to be *de minimis*

New for v2.0:

Emission-factor based Excel tool developed by Colorado State University (CSU) Team

Used for calculating direct and indirect N₂O emission reductions from the implementation of eligible activities

- Project developers must calculate % Synthetic N Rate Reduction

Project developers must first confirm field eligibility



Baseline N Rate: Calculated from the average of the previous N rate applications during the baseline look-back period

New for v2.0:

Baseline Look-Back Period: Period of at least 3 years immediately prior to the field's start date that comprises at least 3 eligible crop years

- E.g., previous 3 years (monoculture), 6 years (2-crop rotation), or 9 years (3-crop rotation) prior to the field's start date

Baseline (continued) (Section 5.3.1.1)

New for v2.0:

Hierarchy of options for setting average baseline N rates:

1. Historical N management records

If no or insufficient records

2. Records of N rate recommendations from agronomic experts

a) Historical records of N rate recommendations for the years in the baseline look-back period

b) Records of N rate recommendations for the current year

3. Estimated historical county average N using the NMPCBLT



Section 6

MONITORING

- **Field Monitoring Parameters & Management Data**

- **Table 6A Field Monitoring Parameters**

- All field level monitoring parameters – including parameters needed for equations and for NMQuanTool

- **Table 6.B Field Management Data**

- GIS shapefile data
- Key dates
- Regulatory compliance records
- Certain baseline practices
- Agronomic records



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Section 7

REPORTING

Reporting periods & verification cycles

– Flexible verification options

- First RP – can be 1-2 cultivation years
- Subsequent RPs
 - 12 month RP/VP – *with site visit*
 - 24 month RP / VP – site visit every 2 cultivation years
 - » No CRTs in interim desktop only verification cultivation year

Record keeping: keep all relevant records for 15 years



Section 8

VERIFICATION

Sampling & scheduling

- Same approach regardless of number of fields/projects grouped together
- Verification schedule developed by VB based on combination of risk-based and random sampling
- 3 step sampling process
 - 1) Risk based site visit selection
 - e.g. if a field fails site visit verification in given year, will need site visit following year to be eligible
 - 2) Additional field site visits selected at random
 - 3) Random sampling for desktop data verification
- Every field included in pool subject to site visit sampling = eligible to generate CRTs for that given RP



DEMONSTRATION

Nitrogen Management Project County Benchmark Lookup Tool



DEMONSTRATION NMQuanTool



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QUESTIONS?

Next Steps

Public comments accepted through *COB Friday, August 31, 2018*

Reserve to consolidate feedback into final “Board-Ready”
Draft – *September 2018*

Final protocol submitted to Reserve Board for approval –
October 17, 2018

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