

# Update on Climate Action Reserve Agriculture Protocol Development



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C-AGG Meeting  
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# Protocols in Development

- **Rice Cultivation Project Protocol (RCPP):** CH<sub>4</sub> reductions resulting from a change in water and/or residue management
- **Nitrogen Management Project Protocol (NMPP):** N<sub>2</sub>O emission reductions resulting from a change in nitrogen management
- **Cropland Management Project Protocol (CMPP):** Soil carbon sequestration resulting from a change in cropland management

# Goals for Rice Cultivation Project Protocol (RCPP)



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- Develop a standardized approach for quantifying, monitoring and verifying GHG offsets resulting from changes in rice cultivation practices that reduce CH<sub>4</sub> emissions from U.S. croplands
- Initially applicable in California and expect to expanding the scope in the next version
- Maintain consistency with or improve upon existing methodologies
  - California Rice Commission/Environmental Defense Fund Methodology



# Project Definition

- Definition: “the adoption and maintenance of one or more of the approved rice cultivation project activities that reduce methane (CH<sub>4</sub>) emissions.”
  - Project activities must be implemented on at least five fields combined into a “project aggregate”
  - Fields do not have to be contiguous or under same management control/ownership
- Approved practices
  - Dry seeding with delayed flood
  - Post-harvest rice straw removal and baling



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# Crediting Period

- Crediting period for fields is 5 years, renewable up to 3 times (20 years total)
- Reporting for each field must be continuous
- Can be “opt-out” reporting periods, but they still count towards the 5 year crediting period
- To renew, a field must meet the eligibility requirements of the most current protocol
- Project aggregates do not have crediting periods
  - All fields in an aggregate at any given time must be within their individual crediting periods to earn CRTs.



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# Start Date

- Each field has unique start date
  - The first day of the ‘cultivation cycle’ during which one or more of the approved project activities is adopted
  - Cultivation Cycle: Begins immediately post-harvest, runs through the end of the next year’s harvest
- Fields with start dates back to September 1, 2009 are eligible if submitted within the first year following protocol adoption (i.e., by December 14, 2012)

# Performance Standard



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Region	Approved RC Management Changes	Performance Standard Test	Justification
CA	<p><b>Dry seeding (DS)</b></p>	<p>A rice field passes the PST by implementing a dry seeding technique combined with delayed flooding. Individual fields that employed dry seeding with delayed flood for 2 or more cultivation cycles in the past 5 years prior to the project start date are ineligible.</p>	<p>Research indicates that dry-seeding is currently practiced on less than <b>3%</b> of the CA rice acreage.</p>
	<p><b>Post-harvest rice straw removal and baling (Baling)</b></p>	<p>A rice field passes the PST by implementing post-harvest rice straw 'baling.' Individual fields that employed baling following harvest 2 or more times in the past 5 years prior to the project start date are ineligible.</p>	<p>Research indicates that residue removal (baling) is currently very limited and variable occurring on an estimated <b>2-7%</b> of the CA rice acreage. Despite initiatives launched by state agencies and private partnerships, the market for rice straw has not grown as expected.</p>



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# Legal Requirement Test

- A project passes the Legal Requirement Test when there are no laws, statutes, regulations, etc. that require the project activity
  - Project Aggregator must sign an Attestation of Voluntary Implementation
- Reserve has found no federal, state or local laws found that explicitly require the project activity
- If a field initially passes the LRT, the field will remain eligible for the entire 5 year crediting period irrespective of changes to legal requirements

# Ecosystem Service Payment Stacking



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- When multiple ecosystem services credits or payments are sought for a single activity on a single piece of land, it is referred to as credit stacking or payment stacking, respectively.
  - No credit stacking opportunities exist
  - However, small potential for payment stacking with NRCS EQIP funds for straw baling, therefore:
    - The use of EQIP payments to finance baling projects is allowable if the project proponent simultaneously pursues EQIP funding and project registration on the same fields
    - EQIP 344A payments for any activity other than baling are allowable as this would not be considered



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# DNDC Methodology Steps

- Use historical records to determine baseline parameters for:
  - Project Inputs (project activity parameters): seeding, residue management
  - Static Inputs (parameters not related to project activity)
- Historical model run for 20 years to attain equilibrium of certain variables
  - Use last 5 years of model run to calibrate DNDC crop growth model to actual crop yields
- Using actual climate, mgmt data:
  - Model Baseline Emissions (assuming continuation of baseline practices)
  - Model Project Emissions (change only those parameters related to project activity that occurred onsite)
- Run Monte Carlo Simulations for BE and PE models (to account for input uncertainty)
- Adjust modeled reduction for each field based on input uncertainty
- Adjust modeled reductions for entire aggregate based on DNDC structural uncertainty



# Primary Emission Reductions

Equation 5.2 modeled aggregate level emission reductions from 'soil dynamics'

$$SDER = \mu_{struct} * \sum_{i=1}^m \mu_{inputs\_i} * (GHG_{BSL,i} - GHG_{P,i})$$

Where,

$\mu_{struct}$	=	Accuracy deduction from model structural uncertainty (% reduction), must use the appropriate value in Table 5.7
$m$	=	Number of individual rice fields included in the project area
$\mu_{inputs,i}$	=	Accuracy deduction factor for individual rice field $i$ due to input uncertainties (% reduction for each field)
$GHG_{P\_i}$	=	Project emissions in year $y$ for individual rice field $i$
$GHG_{BSL\_i}$	=	Baseline emissions in year $y$ for individual rice field $i$



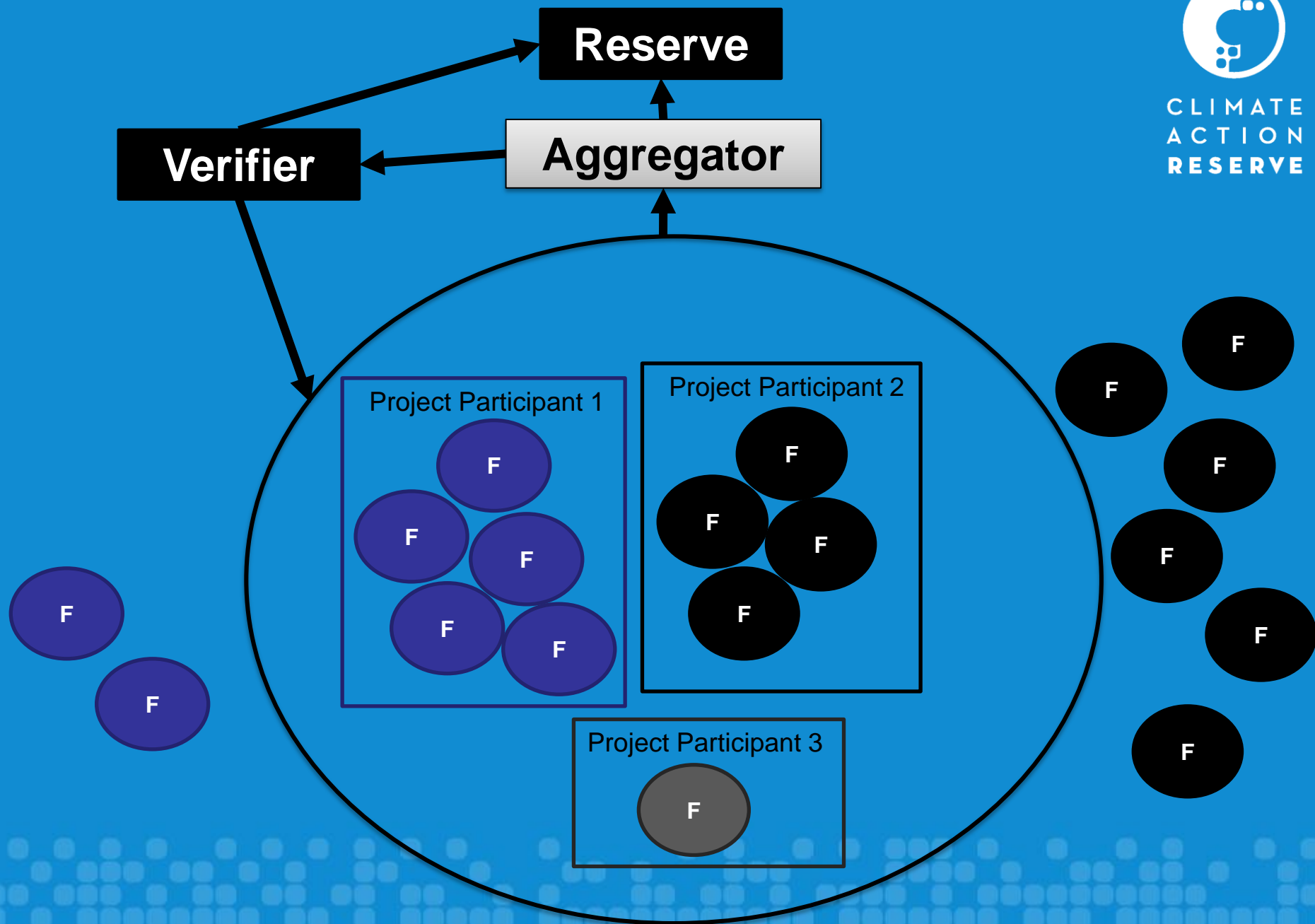
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# Project Aggregation

- Aggregation is integral to RCPP
- Purpose is to help make projects scalable and cost effective, and to improve accuracy of GHG reductions at aggregate scale
- A Project Aggregate = multiple fields owned/managed by one or more Project Participants
- Farmers can be their own aggregator
- Aggregates are unlimited in size
- Eligibility rules, start dates, & crediting periods associated with individual field, not the aggregate
- Fields have limited opportunity to switch aggregates



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# Issuing CRTs

- CRTs ultimately issued by the Reserve to the Aggregator
- Aggregator must attest to the Reserve that they have exclusive claim to the GHG reductions resulting from all fields in the project aggregate
  - Protocol does not dictate the terms for how title is established
  - Allows the aggregator, project participant and land owner (if separate from the project participant) flexibility
- Aggregator must inform land owner with a “Letter of Notification of the Intent to Implement a GHG Mitigation Project”
- Verifier will review contracts and notification letters during verification



# Verification of Aggregates

- Field Monitoring Reports required from all fields each verification/reporting period – submitted to aggregator.
- Verification activities occur on a **random sample** of fields
  - Some fields selected to receive site visits
  - Some fields selected for desk audits of field monitoring reports
  - The rest do not undergo verification activities for that reporting period
- Different sampling designs for different size categories:
  - Small aggregates (10 or fewer fields) somewhat more intensively sampled
  - For large aggregates, sample size is non-linear (larger aggregate, fewer samples proportionally)
  - Large multi-participant aggregates, sampling stratified by participants

# Public Comments Requested



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- Please submit written public comments by **November 11, 2011**
- We plan to submit the RCPP to the Reserve Board for adoption on **December 14, 2011**
  - Board meeting will be open to public participation
- For more information, visit:  
<http://www.climateactionreserve.org/how/protocols/agriculture/rice-cultivation/>



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# Goals for NMPP

- Develop a standardized approach for quantifying, monitoring and verifying GHG offsets resulting from changes in nitrogen management practices that reduce N<sub>2</sub>O emissions from U.S. croplands
- National scope & relevant for CA cap and trade program
- Maintain consistency with & improve upon existing methodologies
  - American Carbon Registry
  - Electric Power Research Institute/MSU
  - Alberta Offsets Program
  - Reserve's RCPP once adopted (aggregation and other general principles)

# NMPP Development Timeline



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Methodology Synthesis Paper	May 6, 2011
Workgroup Meeting 1 (conference call)	May 18, 2011
Workgroup Meeting 2 (conference call)	June 27, 2011
Background Paper Completed	July 18, 2011
Draft protocol to workgroup	July 27, 2011
Workgroup Meeting 3 (Los Angeles)	August 1, 2011
Science Advisory Committee Meeting (Los Angeles)	September 7, 2011
WG Meetings 4 (conference call)	October 25, 2011
Second Phase of Background Research	Fall/Winter 2011
WG meetings 5+	TBD
Science Advisory Committee (conference calls)	TBD
Revised protocol & start of 30-day public comment period	April 2012
Public workshop	April 2012
Protocol adoption by Reserve Board	<b>June 27, 2012</b>



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# Potential Approved Practices

*Based on Science Advisory Committee Input*

- Reduce N applied w/out going below crop demand
- Increasing number of N applications (if delivering N through irrigation systems)
- Switching from fall to spring N application
- Applying N closer to the root system
- Use of nitrification inhibitors or nitrification inhibitors combined with urease inhibitors
- Switch from anhydrous ammonia to urea
- Changing to slow-release fertilizer
- Adding N scavenging cover crops

*(SAC meeting report will be available soon)*



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# Quantification Approach

- Considering ways to include Tier 2 and Tier 3 quantification approaches in the NMPP
  - One “approved” approach per management system
- Working on operational standards and criteria for Tier 2 and Tier 3 approaches
- Considering allowing submissions of quantification approaches, in addition to Reserve developed approaches
  - Provides a way to cover a wide diversity of possible management systems while applying uniform and consistent standards

# Ongoing Research and Development for NMPP



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- Environmental credit stacking subcommittee working on options and recommendations
- Analyzing common practice trends in use of approved nitrogen management practices, to set performance standards
- Analyzing EQIP and other program funding for approved nitrogen management practices

# Contact Information



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