

Offsets and Rural Communities – the California Experience

**Senate Committee on Environment and Natural Resources
and
House Committee on Energy and Environment
State of Oregon**

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Winrock International Institute for Agricultural Development

Non-profit organization that works in the U.S. and around the world to empower the disadvantaged, increase economic opportunity, and sustain natural resources

- Formed in 1985 from three Rockefeller family organizations
- Dedicated to economic development and sound resource management in the U.S. and around the world
- Climate change and its impacts on the poor are a central concern
- Supports market mechanisms as a means to improve the environment and alleviate poverty



*Winthrop Rockefeller,
Governor of Arkansas*

- **First U.S. voluntary greenhouse gas registry, founded 1996**
 - 80+ million tons of CO₂-e emissions reduction credits issued
- **Registry roles:**
 - Develop and approve carbon protocols/methodologies
 - Review and register projects
 - Oversee independent verification
 - Issue serialized offsets
 - Transparently track transactions and retirements
- ARB-approved Offset Project Registry (OPR) and Early Action Offset Program (EAOP) for the California cap-and-trade program





CA Air Resources Board Compliance Offsets Protocols

- Forestry (Improved Forest Management, Avoided Conversion, Reforestation)
- Livestock Manure Digesters
- Rice cultivation
- Destruction of Ozone Depleting Substances
- Mine Methane Capture
- Urban Forestry



ARB Offset Credits (ARBOCs) Issued

Project Type	ODS	Livestock Digester	US Forests	Mine Methane	TOTAL
Compliance	7,801,143	1,782,340	22,647,881	1,261,550	33,492,914
ACR compliance volume (%)	4,091,711 52%	305,215 17%	12,233,685 54%	773,204 61%	17,403,815 52%
Early Action	6,336,710	1,695,029	11,657,580	2,879,684	24,187,917
TOTAL	14,137,853	3,477,369	35,924,375	4,141,234	57,680,831

- ARBOCs issued from 283 projects: 166 compliance & 117 early action
- Projects: ODS 105; Forestry 58; Livestock 108; Mine Methane 12
- ACR has issued 23 million ROCs awaiting conversion to ARBOCs

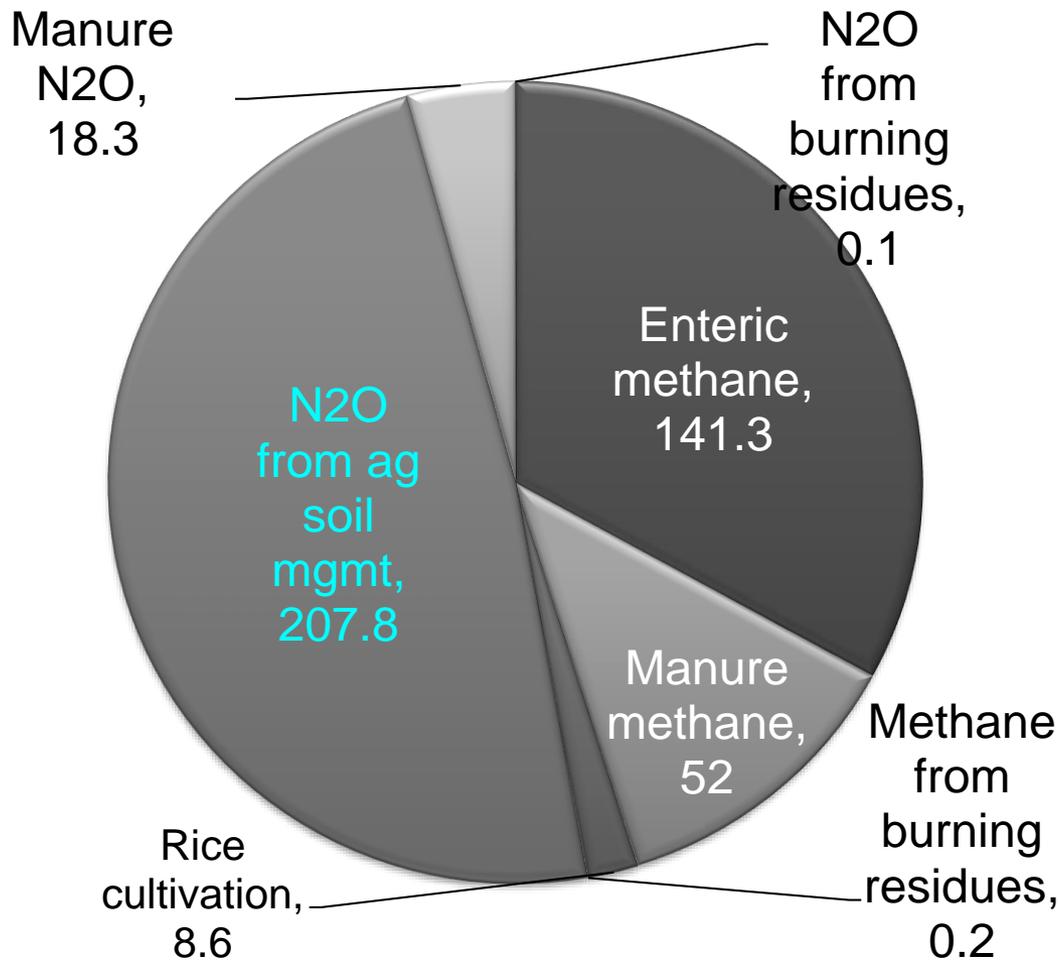
* As of May 22, 2017



Forest Carbon in Oregon

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- California cap-and-trade
 - Warm Springs Confederated Tribes
 - Green Diamond Klamath East
 - Green Diamond Klamath West
 - Voluntary
 - Bear Creek Watershed (City of Astoria)

Emissions from U.S. agriculture (MMT CO₂e, 2010)



- Agriculture = 428 MMT CO₂e or 6.3% of US GHG emissions
- Largest source is N₂O from fertilizer

Fertilizer Management

- Reducing N fertilizer application in crop production can reduce N_2O emissions.
- N_2O reductions are permanent.
- N_2O reductions can be implemented across a wide range of crops and geographic areas in the U.S. and abroad.
- N_2O reductions can be achieved at low cost.
- N_2O reductions in crop production provide ancillary co-benefit of improved water quality.

Grazing Land & Livestock Management

- Comprehensive and flexible accounting framework for any beef/dairy GLLM activity that impacts enteric, manure, fertilizer, or fossil fuel GHG emissions or biotic sequestration
 - Non-prescriptive on practices
- Modular structure
 - Some activities only impact some SSRs
- Scaled accounting methods based on *ex ante* estimate of impacts in each source/pool
 - Thresholds at 5,000 and 60,000 tCO₂e/year

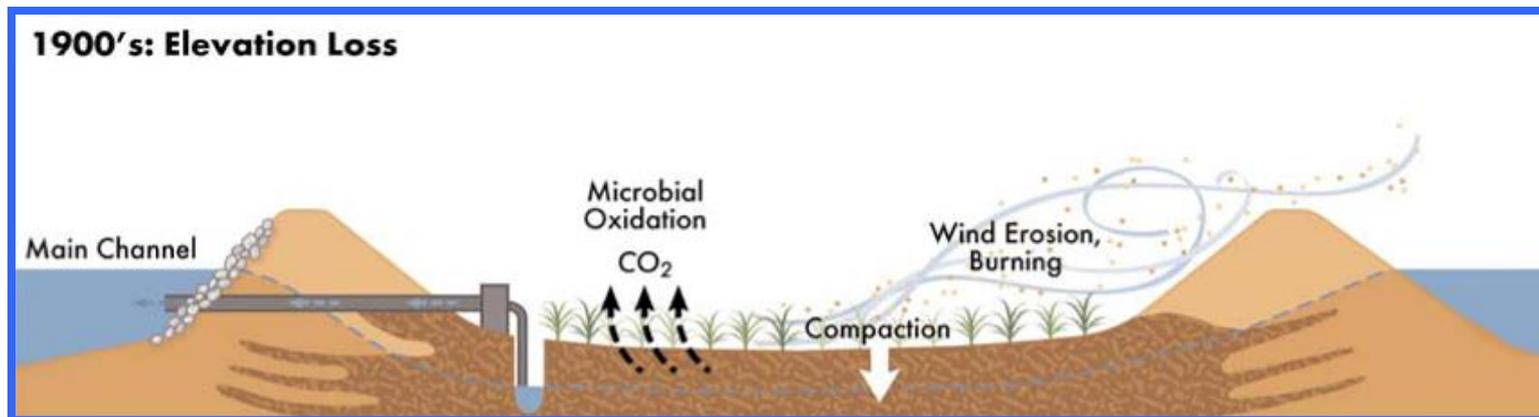


Compost Additions to Grazed Grassland

- Quantification framework for emissions reductions from
 - avoiding anaerobic decomposition of organic material used in compost production (optional)
 - directly increasing soil organic carbon (SOC) content by applying compost to grazed fields
 - indirectly increasing SOC sequestration through enhanced plant growth in amended fields.



- Wetland restoration in the SSJ Delta, Suisun Marsh, and tidal wetlands along the CA coast
- Carbon sequestration, biomass accretion
- Avoidance of organic soil oxidation and subsidence
- Project activities: agriculture to wetland, dry agriculture to rice, open water to wetland
- Co-benefits: water retention, levee stability, fish and bird habitat, subsidence reversal, investment in the delta



Carbon Accretion, Habitat Creation

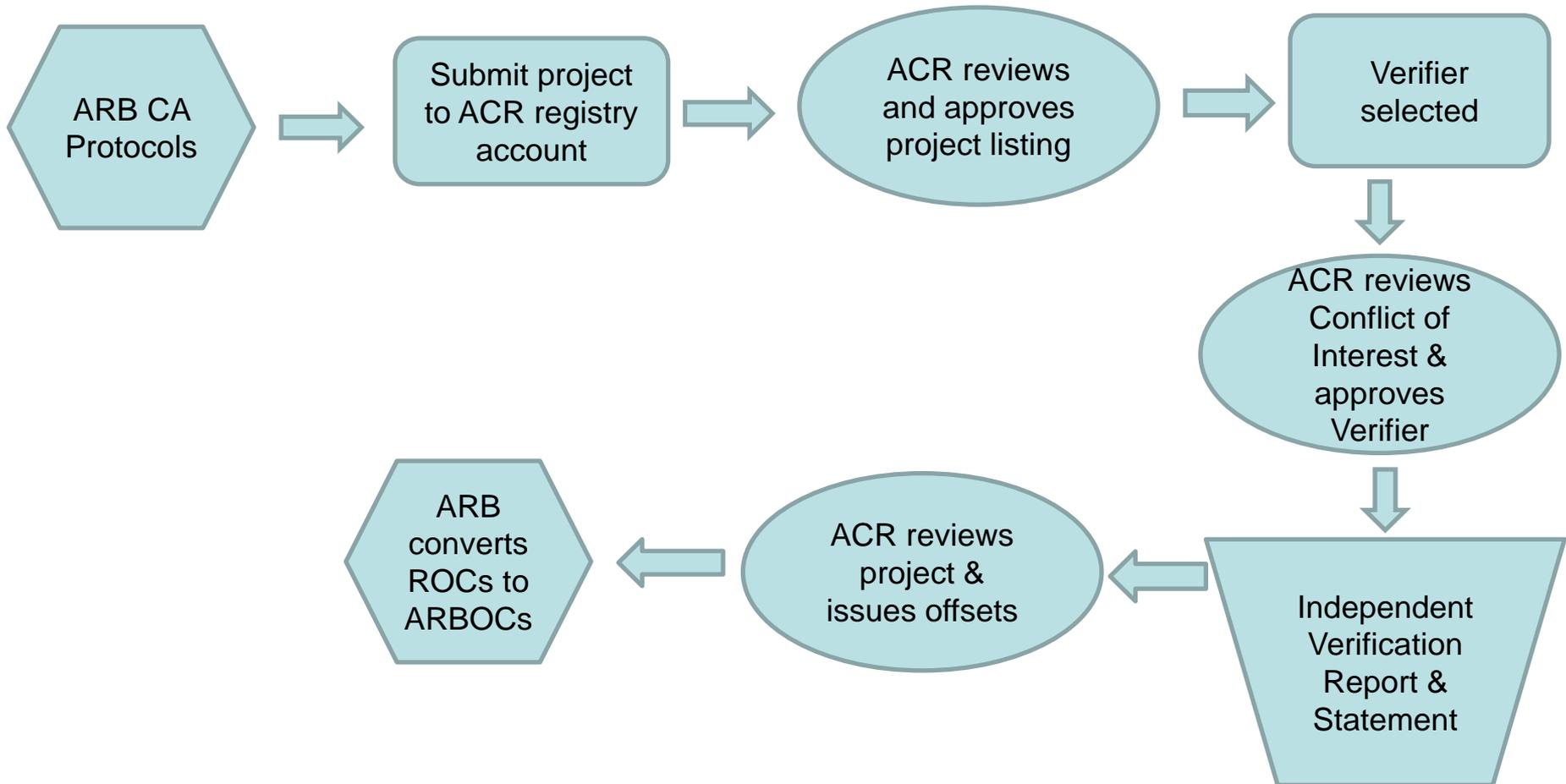


Oxidizing drained peat soil.....

Restored wetland accreting carbon...



Carbon Offset Development Cycle in California





Washington State Model for Compliance Offsets

- Clean Air Rule took effect Jan. 1, 2017
- Specific voluntary protocols approved (9 ACR's)
- Voluntary registries issue offsets from their own protocols
- Registry offsets acceptable as compliance instruments

Lessons for Rural Projects from California Experience

- At current carbon prices, costs are barrier to offset project types with low volumes
 - Fragmented farming operations and few credits per acre
 - Aggregation not allowed in California due to invalidation provisions
 - Aggregation possible in Quebec (and Ontario) due to buffer pool approach



Lessons for Rural Projects from California Experience

- Programs investing auction revenue should be compatible with offsets protocols
 - CA government programs can only ensure sequestration for three years; offsets can provide long-term financial support
 - To guard against reversal, quantification methods for GHG benefits should align with offsets protocols
 - Technical assistance may be necessary to help landowners meet data requirements of offsets protocols
- Interest in more in-state offsets
 - Consider giving DEQ discretion for higher or no limit on offsets from projects in Oregon, so long as WCI linkage not jeopardized



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