

# **Grassland Project Protocol Workgroup Meeting 3**

October 21, 2014



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Call-in: (646) 307-1706  
Code: 712-112-843



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# Roll call

- Reserve staff
- Contractors
- Workgroup

Workgroup Members	Location
Adam Chambers	
Richard Conant	Phone
Joe Fargione	Phone
Billy Gascoigne	Phone
Teresa Koper	LA
Robert Parkhurst	LA
Richard Scharf	LA
Patrick Splichal	Phone
Joel Brown	

# Agenda

Item #	Expected time	Description
1	9:00 – 9:30	Introduction and review of agenda
2	9:30 – 9:45	Development update
3	9:45 – 12:00	Project definition, eligibility, and permanence
	12:00 – 12:30	Lunch
4	12:30 – 1:30	GHG assessment boundary and quantification
5	1:30 – 2:30	Ownership and aggregation
	2:30 – 2:50	Time cushion
6	2:50 – 3:00	Next steps
	3:00	Adjourn

# Today's goals

1. Assess the overall direction of the GPP
2. Consider the major policy and technical decisions that we are proposing
3. Begin to evaluate the component parts as a whole
4. Provide feedback on specific items as requested by staff

# What we won't discuss today

Items to be tabled until the next meeting (unless we end up with extra time):

- Monitoring
- Project Implementation Agreement
- Natural grassland management
- Payment stacking
- Reporting and verification details

# Process

- Staff will present summary slides covering the agenda items
- We will have specific questions for discussion
- WG members are welcome to raise their own questions or provide relevant feedback
- If an issue comes up that we will discuss later, it will go in the “parking lot”

# Development update

- **Next meeting:** Thursday, Dec 4<sup>th</sup>, 12:30-3:00 (week 31)
  - Webinar
  - Discuss any remaining issues prior to finishing a draft for the official workgroup comment period
- Now:
  - Reserve staff building the protocol and finalizing major decisions
  - Contractor developing quantification and preparing to model
- November – December
  - Contractor delivers model results and quantification guidance
  - Reserve develops official workgroup comment draft

# Protocol table of contents

1. Introduction
2. Project Definition
3. Eligibility
4. GHG Assessment Boundary
5. Quantification
6. Monitoring
7. Reporting
8. Verification
9. Glossary
10. References

## Appendices

- A. Development of Performance Standard
- B. Development of Standardized Parameters and Emission Factors
- C. Default Parameters and Emission Factors
- D. Example Project Area Map



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Agenda Item 3

# PROJECT DEFINITION & ELIGIBILITY

# Project definition

- A planned set of activities designed to prevent emissions of GHGs to the atmosphere through conserving grassland carbon stocks and avoiding cultivation activities on an eligible project area
- Project area must be grassland that is suitable for conversion
- “Grassland”
  - An area of land dominated by native grass species with little to no tree canopy. Other plant species may include legumes, forbs, and other non-woody vegetation. Tree canopy may not exceed 10% of the land area on a per-acre basis. Grassland may include managed rangeland or pastureland, but not cultivated cropland.

# Project activities

- Prevent conversion of grassland to cropland through permanent conservation (easement or public ownership)
- Must meet eligibility requirements
- Does not employ synthetic fertilizer amendments
- Does not require artificially-altered drainage or irrigation to be maintained as grassland
- No liquid manure management
- Land not previously registered as a Grassland project
- May involve seeding, organic fertilizer, or grazing

# Defining project area

- Meets eligibility requirements
- Project boundaries must be described with a georeferenced map
- Boundaries must exclude areas which do not meet eligibility requirements (e.g. mandatory buffers, easements)
- Contiguous/continuous areas
  - Open question regarding when a single project must be split into multiple projects

# Applicability

- Conterminous United States and tribal areas
- “Super strata” where the contractor has enough data to develop default values
  - Super strata = combination of MLRA and soil texture
  - Need sufficient NRI sites for grassland and cropland
- Natural grassland
  - No active management other than grazing below some set threshold (NRCS guidance?)
  - Continuous grassland cover for at least 10 years prior to start

# California

- We are attempting to accommodate California and the ARB program wherever possible
- Can develop a field crop emission factor like the rest of the country
- Models are currently unable to handle quantification of orchards and vineyards.
  - Biomass dynamics are not well studied. Need more data to refine allometric equations.
  - Management variables can have a significant impact on direction and magnitude of carbon changes, and are not well studied.
- Perhaps financial and suitability screens will identify pockets of conversion threat
  - Currently the financial additionality threshold map looks promising

# Start date and crediting period

- Start date
  - Action of committing project area to conservation through recording of easement or transfer to public ownership
- Crediting period 25-30 years
  - Other grassland (ACR, IPCC) assume 20 years to move from one equilibrium to another
  - Evidence that 20 years is too short for some systems
  - ARB FPP crediting period is 25 years
  - Modeling is run on 5 year increments, so we will be able to see whether the emission factors past 25 years are high enough to justify continued project reporting and monitoring

# Permanence

- 100 years from credit issuance for sequestered tonnes
  - E.g. credit issued in year 10 is maintained until year 110
  - Not yet clear whether we can differentiate soil carbon tonnes from avoided emission tonnes
- Reversals: release of stored carbon that has already been credited
  - Avoidable reversals: release that is preventable (i.e. tilling, project termination)
  - Unavoidable reversals: release that is natural or otherwise out of the control of any Grassland Owner
- Avoidable reversals will be repaid by the Project Developer, not a buffer pool

# Unavoidable reversals

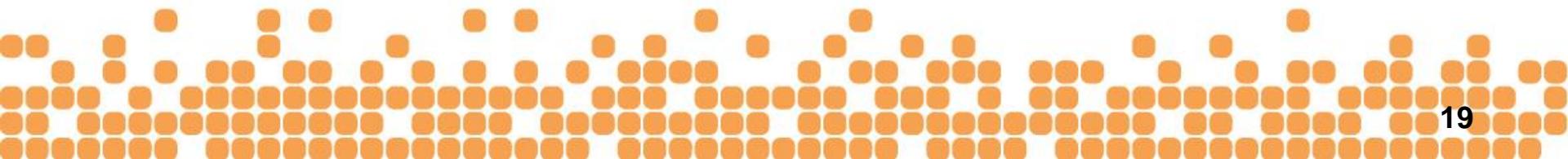
- What are unavoidable reversal risks to grasslands?
  - Fire, flood, legal change...
- May be insured against through a mandatory buffer pool
- Buffer pool
  - Identify reversal risk for soil carbon tonnes (% of credits)
  - Shared pool among all GPP projects
  - Contributions not returned to projects except in the case of a reversal
- Open question as to whether there are actually significant “unavoidable” reversal risks to grasslands. If not, then no buffer pool will be required

# Performance Standard Test (PST)

- Four aspects to determining eligibility
  1. Financial addtionality threshold
  2. Suitability determination
  3. Must generate soil carbon emission reductions
  4. Limits on payment stacking

# PST: Financial

- Forest avoided conversion protocol requires full appraisal from certified professional
  - Compare forest value to identified conversion value
  - Conversion premium of 40-100% is eligible with 50% discount
  - Conversion premium of >100% is eligible, no discount
- Concerns that this is too expensive and uncertain for grassland projects
- Propose to move to a standardized threshold for additionality



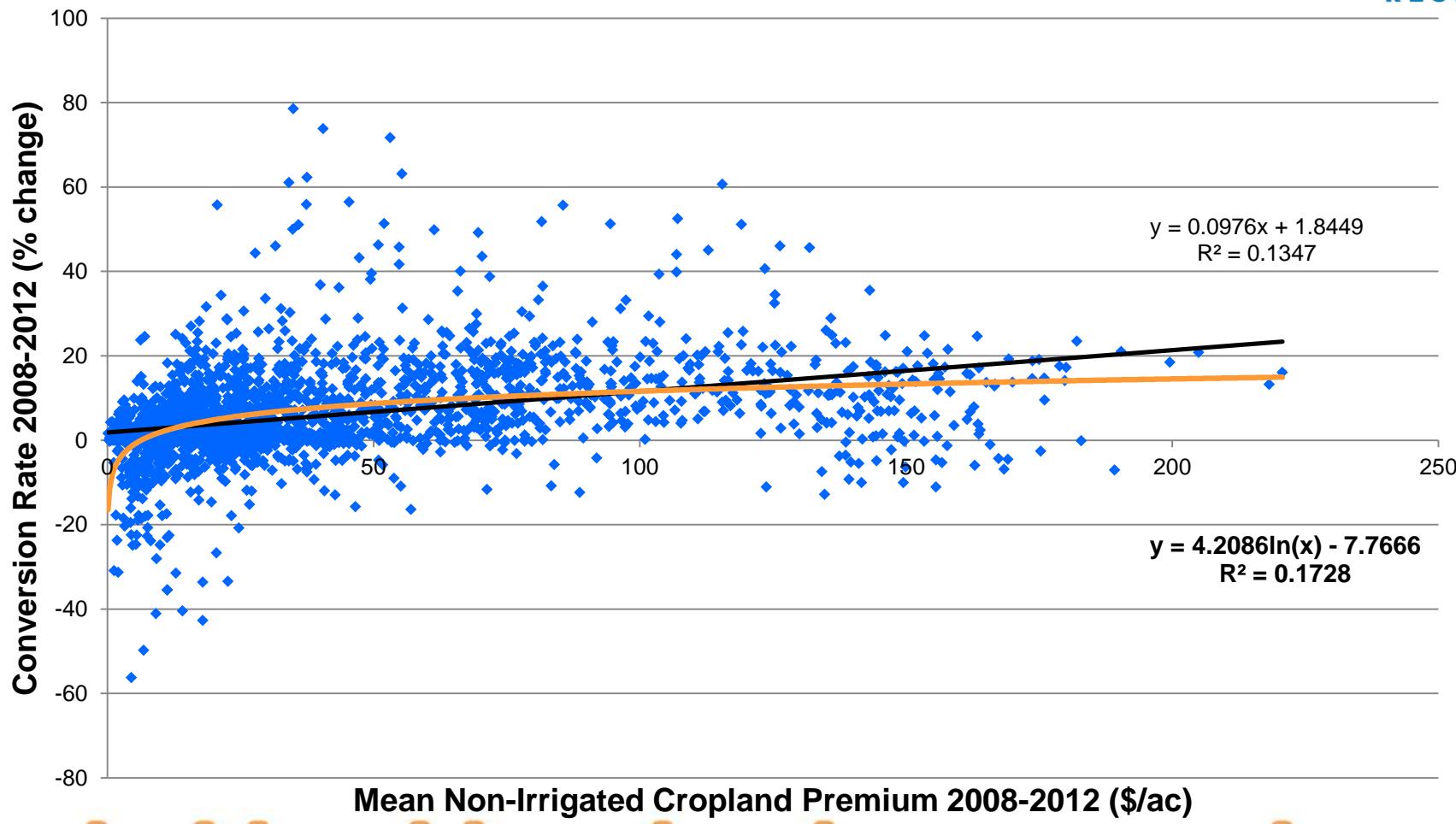
# PST: Financial

- Standardized threshold based on rental rate differences
  - Compare cash rent rate of grassland and cropland
  - Non-irrigated cropland premium of \$\$-\$\$\$\$ is eligible with 50% discount
  - Non-irrigated cropland premium of >\$\$\$ is eligible, no discount
  - Irrigated cropland premium of >\$\$\$\$ is eligible, must prove ability to irrigate
  - Appraisal option remains as an alternative if can't meet standard
- Likely need to consider impact of additional revenue from payment stacking as part of PST

# PST: Updates to financial threshold

- New county rent rate data are issued by the NASS every September
- Propose averaging three years of data at a time to develop each new threshold map
- New maps/tables issued by the Reserve every October and apply to projects in the following calendar year
  - **Example:** October 2015 the Reserve issues a list of eligible counties based on the average rent rates for 2014 and 2015. This list applies to projects with start dates on or after January 1, 2016.

# PST: Premium vs conversion rate





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# PST: Setting the threshold

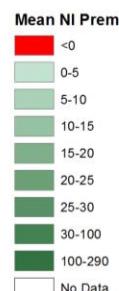
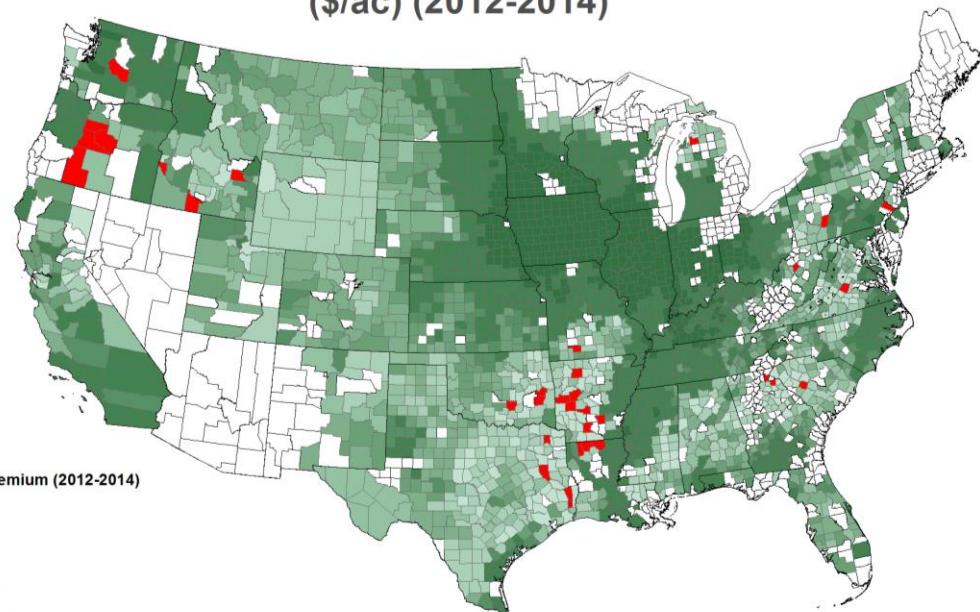
	Linear trendline	Logarithmic trendline
Equation	$y = 0.0976x + 1.8449$	$y = 4.2086\ln(x) - 7.7666$
R <sup>2</sup>	0.1347	0.1728
x intercept	(\$18.90)	\$6.33

Conversion Rate (%)	Linear trendline	Logarithmic trendline
0.5%	(\$13.78)	\$7.13
1%	(\$8.66)	\$8.03
1.5%	(\$3.53)	\$9.04
2%	\$1.59	\$10.18
2.5%	\$6.71	\$11.47
3%	\$11.84	\$12.91
3.5%	\$16.96	\$14.54
4%	\$22.08	\$16.38
4.5%	\$27.20	\$18.44
5%	\$32.33	\$20.77
5.5%	\$37.45	\$23.39
6%	\$42.57	\$26.34
6.5%	\$47.70	\$29.66
7%	\$52.82	\$33.40
7.5%	\$57.94	\$37.62
8%	\$63.06	\$42.36
8.5%	\$68.19	\$47.71
9%	\$73.31	\$53.73
9.5%	\$78.43	\$60.50
10%	\$83.56	\$68.14

# PST: Example financial map 1

- Counties in red represent areas where pastureland is more valuable than cropland.
- Data substitution has been applied. Where available, the value for “Other (Combined) Counties” for that ASD was used to fill in a missing value
- “No Data” may represent areas where irrigation is required for cropland or where no grazing occurs.
- Can explore some sort of “adjacency” provision to cover “no data” counties in hotspots

Mean Cropland Premium for Non-Irrigated Lands (\$/ac) (2012-2014)

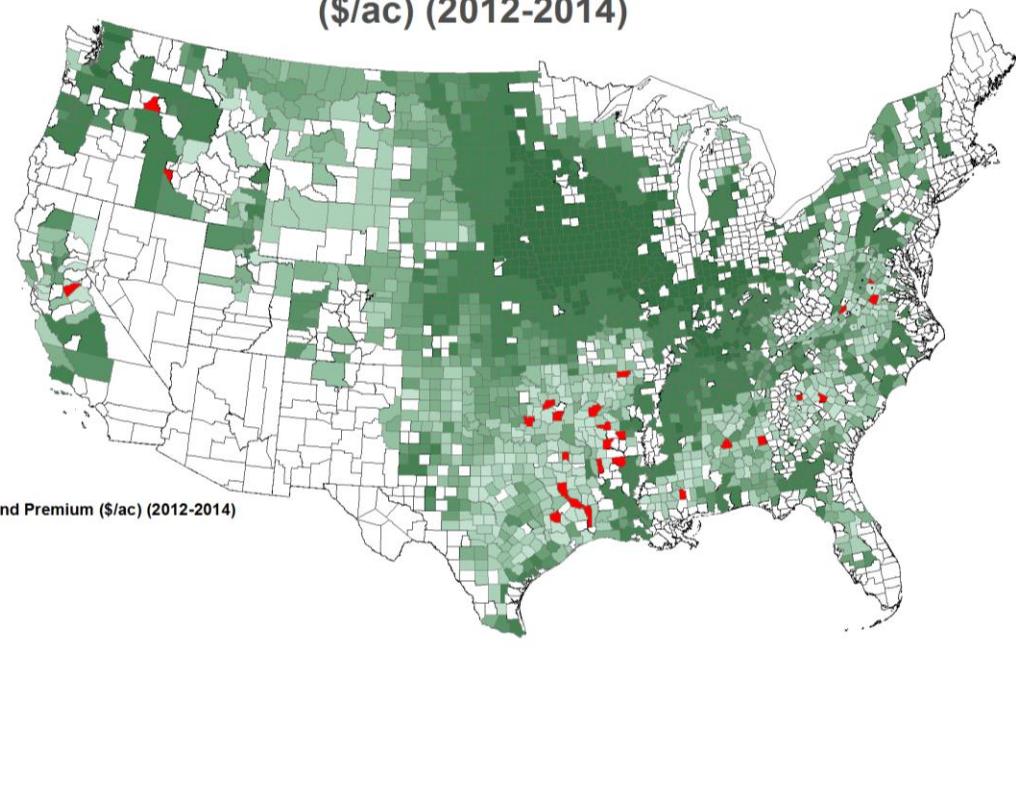


Data substitution:  
Counties where there are no county-specific data, but a value exists for the combined average for the Agricultural Statistic District have been assigned the ASD average.

# PST: Example financial map 2

- Same map, but without data substitution

Mean Cropland Premium for Non-Irrigated Lands  
(\$/ac) (2012-2014)



# PST: Appraisal option

- Appraisal guidelines from Forest Project Protocol
- This would be used for the following circumstances
  - Tribal lands
  - Counties with no data
  - Counties below the eligibility threshold
- Should the appraisal thresholds be the same dollar/acre values as the rental rate thresholds?
  - It seems that land value will have a different magnitude than rental rate, making such a comparison incorrect
  - Could run a similar analysis of land value survey to determine threshold, but those data are only available at state level

# PST: Suitability

- Must be able to prove that the project area is suitable for conversion
- Feedback that Land Capability Classification is not sufficient for this purpose
- Request feedback and direction from WG

# PST: Emissions

- Project must generate soil carbon emission reductions
- Determined using the emission factor tables
  - Strata with emission factors that would generate a net gain of soil carbon due to conversion are not eligible
  - Tables in Appendix C will list all strata and identify them as eligible or ineligible

# Legal Requirement Test

- Must be no legal mandate requiring conservation or preventing crop cultivation
  - See also section on payment stacking
- Programs which may impede legal ability to convert:
  - Habitat Conservation Plan (FWS)
  - Conservation Plan of Operation under Sodbuster Regulations (USDA)
  - State programs (e.g. CA Endangered Species Act permitting)
- Reserve Forest protocol considers these contracted programs to effectively be legal mandates

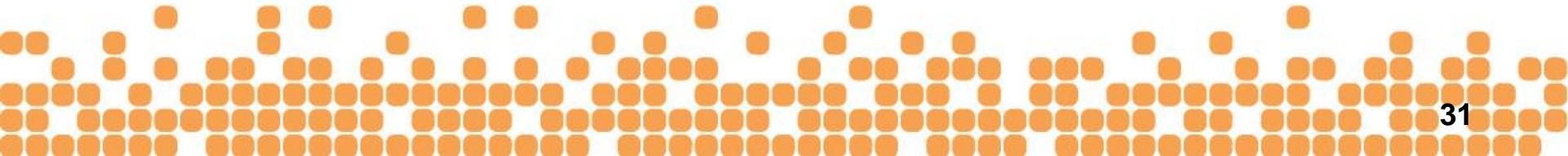
# Regulatory Compliance

- Projects must be in compliance with applicable regulatory requirements
  - Water quality
  - Livestock management
  - Other?



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# LUNCH BREAK



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Agenda Item 4

# **GHG ASSESSMENT BOUNDARY & QUANTIFICATION**

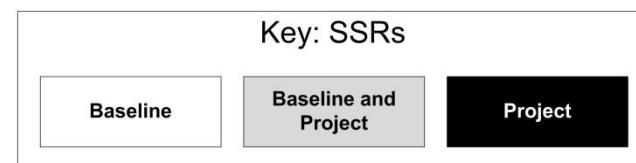
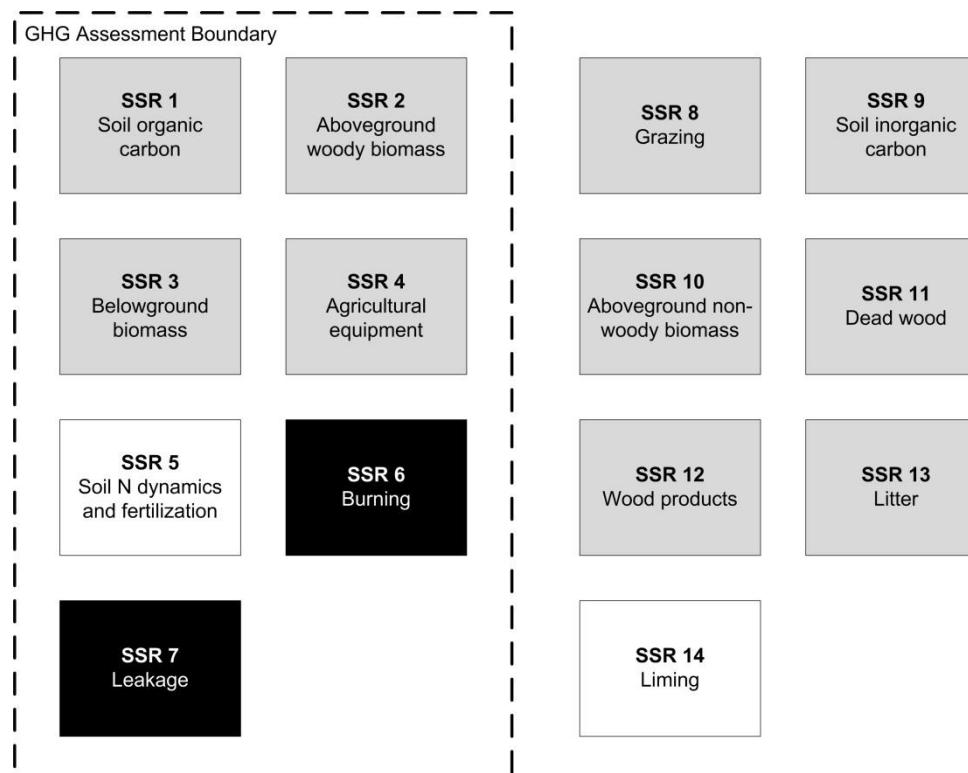
# GHG Assessment Boundary

- Avoided emissions from soil carbon loss
  - Optional woody biomass
- Avoided emissions from conversion and crop production
  - N<sub>2</sub>O from fertilizer
  - CO<sub>2</sub> from fossil fuels
- Project emissions from grazing (enteric & manure CH<sub>4</sub>)
  - On a macro scale, it is reasonable to exclude project emissions due to grazing.
  - Assume that the grazing would occur anyway, regardless of project activities, and the overall amount of livestock grazing is not going to change due to project activities
  - Includes limits to grazing intensity



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# GHG Assessment Boundary



# Quantification

- Emission reductions are equal to the avoided soil carbon emissions that would have occurred in that year, plus the avoided N<sub>2</sub>O and CO<sub>2</sub> emissions that would have occurred in that year, minus the project emissions that actually occurred in that year.
  - Optional accounting for avoided loss of woody biomass
- Discounts
  - Uncertainty of baseline conversion (DF<sub>conv</sub>)
  - Uncertainty of modeling future practices and climate (DF<sub>σ</sub>)

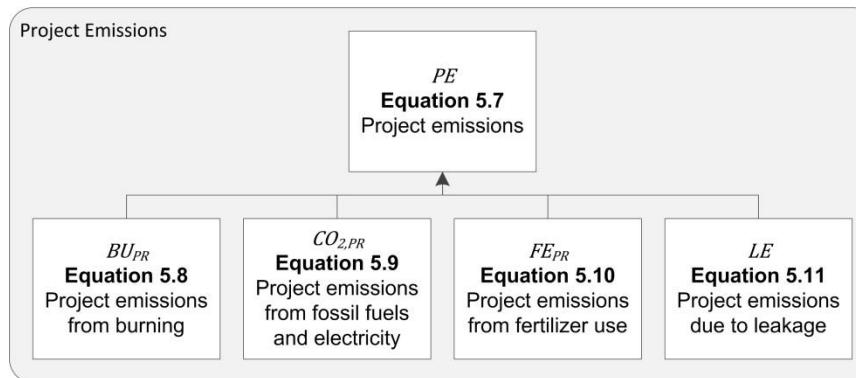
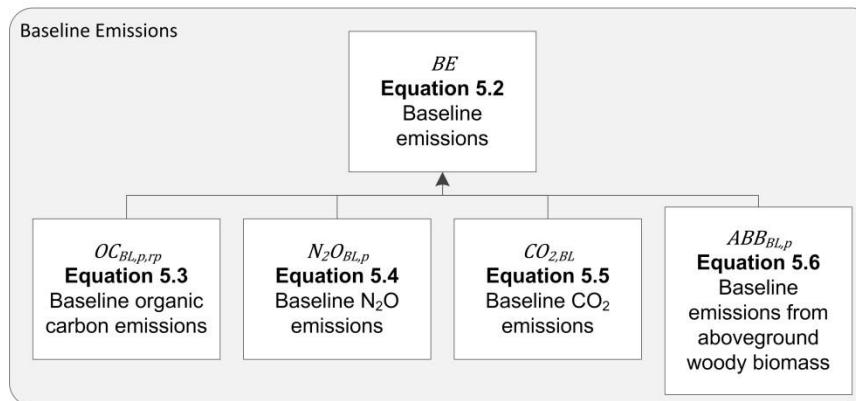


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# Equations

$$ER = BE - PE$$

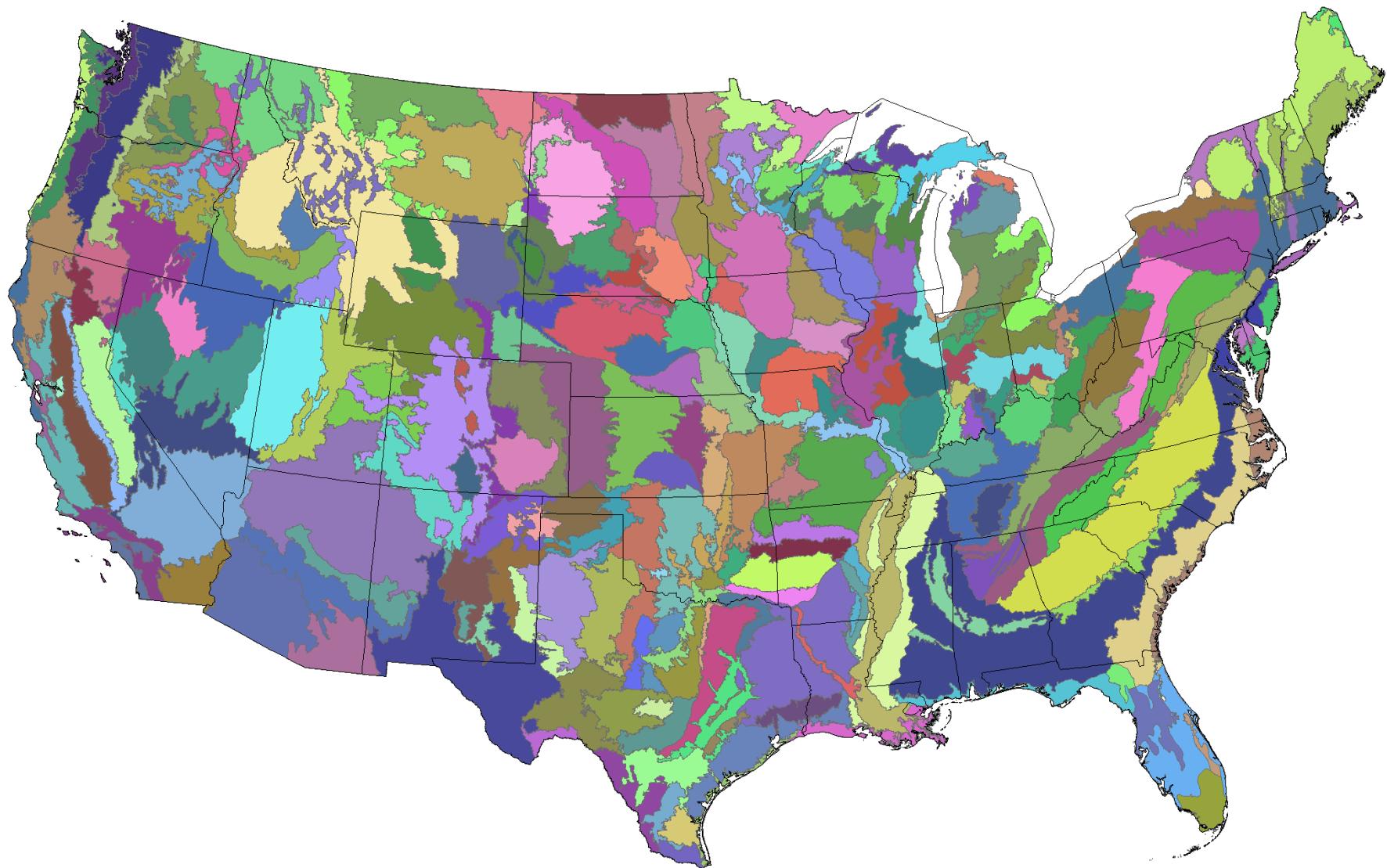
**Equation 5.1**  
Emission reductions



# Stratification

- Each project area is stratified based on three aspects:
  - Major Land Resource Area (MLRA)
  - Soil texture (Clayey, Loamy, Sandy)
  - Prior land use (10-30 yrs grassland, or >30 yrs grassland)
- Stratum naming
  - “[MLRA]\_[SOIL TEXTURE]\_[PRIOR LAND USE]”
  - Example: “1\_Loamy\_10”
    - MLRA 1 (Northern Pacific Coast Range, Foothills, and Valleys)
    - Soil: Loamy
    - Land use: >10 but <30 years continuous grassland cover

## Major Land Resource Areas of the Conterminous United States



# Soil carbon emissions

- Preliminary estimate by the contractor
  - Used 2012 US GHG Inventory data of sites which were converted from grassland to cropland between 1980 and 1997
  - Extracted estimate of soil carbon loss (or gain) over first 10 years post-conversion
- Midwest, Mid-South, parts of West Coast and Lake States
  - **Clayey and loamy soils lost 0.5 – 1.9 tCO<sub>2</sub>/acre/year**
  - **Sandy soils were less dramatic, around 0.3 – 0.9 tCO<sub>2</sub>/acre/year**
  - Other regions were less significant, or showed soil carbon gains due to increased productivity from irrigation
- **Caveats**
  - Methodology to extract this data was much less robust than the systematic modeling that will be performed for final emission factors
  - Subsequent years (10-25) expected to be lower, on average
  - Emission sources other than soil C not included

# Discount factors

- $DF_{conv}$ 
  - Risk of conversion assumption
  - 0% for counties above \$\$\$ threshold
  - 50% for counties between \$\$ and \$\$\$
- $DF_\sigma$ 
  - Uncertainty of modeling future practices and climate

Reporting Year	2015-2019	2020-2024	2025-2029	2030-2034	2035-2039
Discount Factor ( $DF_\sigma$ )	x%	(x+y)%	(x+2y)%	(x+3y)%	(x+4y)%
Example: x=1, y=1	1%	2%	3%	4%	5%

# Woody biomass

- Optional quantification for sites which would have lost a significant amount of woody biomass due to conversion
- Not accounting for sequestration over time
- Question: what is the fate of woody biomass removed from converted grasslands?
  - **Non-tree:** Shrubs are likely left between fields, burned, chipped, or otherwise disposed in a manner that would release the carbon in a relatively short timeframe (0-5 yrs)
  - **Trees:** If wood products, then not much carbon release. If chipped or burned, then immediate release. Unlikely trees would be left on fields
- Quantification undetermined at this time

# Project emissions from burning

- Reserve would like workgroup input on burning emissions
  - Is prescribed burning likely to occur?
  - What approach is recommended?
  - IPCC default factors are available based on the kg of dry matter combusted in the fire
    - Ex. If a fire burns 10 acres with 600 lb/acre dry matter, that would generate project emissions of 4.3 - 5.1 tCO<sub>2</sub>e, or about 0.5 t/ac

Units in g/kg dry matter combusted		
CH <sub>4</sub>	CO <sub>2</sub>	N <sub>2</sub> O
2.3 ( $\pm 0.9$ )	1613 ( $\pm 95$ )	0.21 ( $\pm 0.1$ )

# Leakage

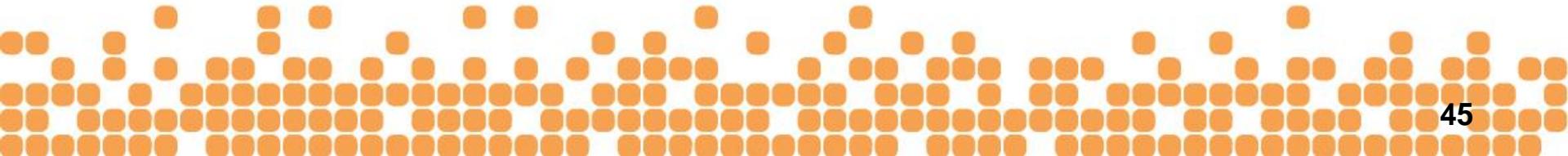
- Composite baseline scenarios do not lend themselves to project-specific determinations of leakage
- Determining leakage for AGC projects is complex and highly uncertain
- Propose to use 20% leakage discount, similar to ACR ACoGS
  - Subtract 20% of calculated BE
- Reserve staff are continuing to research this issue



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Agenda Item 5

# OWNERSHIP & AGGREGATION

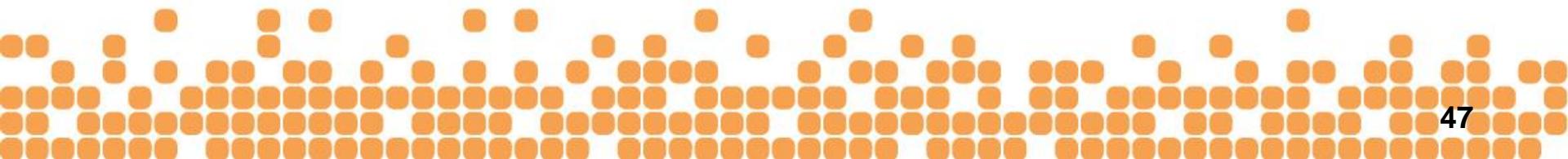


# Ownership

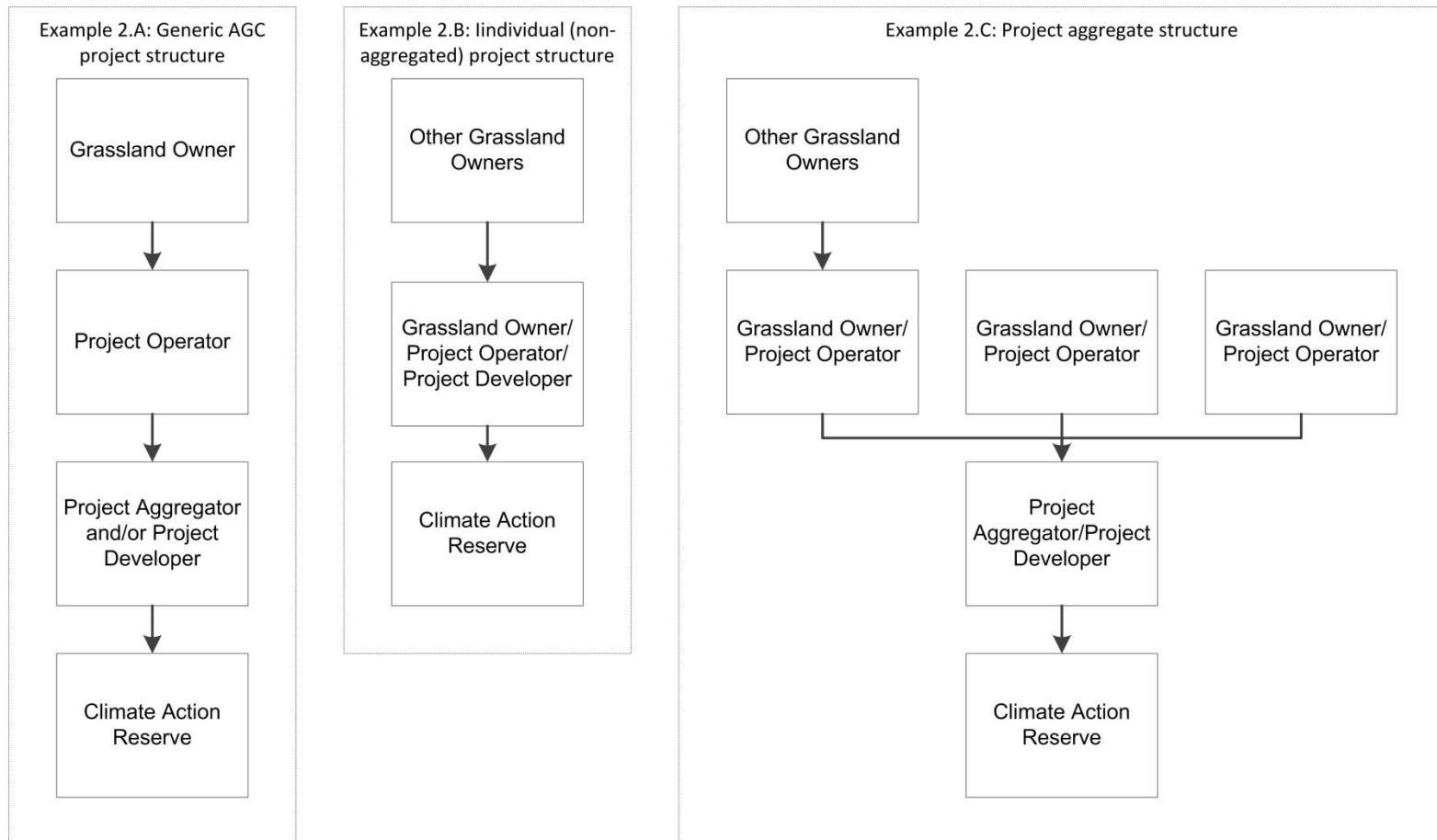
- Grassland Owner: an entity with ownership rights to the project area, especially the soil carbon
  - Single project may have multiple owners
  - Open question regarding idea of *de minimis* ownership
- Entities which do not own the land, but who own development rights which could impact the soil carbon must be included as “Grassland Owners”
  - E.g. mining, drilling, wind power

# Project Developer/Aggregator

- Propose to set this up similar to Forest aggregation
  - Each project area is a separate project, with separate quantification, but pooled resources when it comes to verification and registry processes
- Project Operator = the grassland owner
- Project Aggregator = a project developer who carries out the carbon work, coordinates the verification, deals with the registry
- Project Developer = the PO if it's an individual project, or the PA if it's an aggregate
- Think of the Operator as an “OPO” and the Aggregator as an “APD”
- Find some way to avoid account fees for individual projects and project operators (i.e. one fee for the aggregate and the aggregator)



# Ownership structures



# Aggregates

- VB will visit a certain % of projects each year, subject to a minimum number of sites
- Projects which make up >X% of emission reductions are required to be visited annually?
- Single verification process and report that covers the entire aggregate (i.e. similar to joint reporting under a single multi-project OPDR, as in ARB Rice Protocol)



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Agenda Item 6

# NEXT STEPS

# Next steps

- If you would like to submit written comments on what we have proposed so far, please prepare them as a standalone document, preferably organized by protocol section, and submit them by Oct 31<sup>st</sup>
  - Email Anna ([aschmitz@climateactionreserve.org](mailto:aschmitz@climateactionreserve.org))
- Reserve staff will prepare the official workgroup comment draft
  - Comment period will be 30 days
  - Expect to receive the draft during the first week of January
  - Staff will respond to all comments
- Public comment period will begin mid-March



# Contact Information

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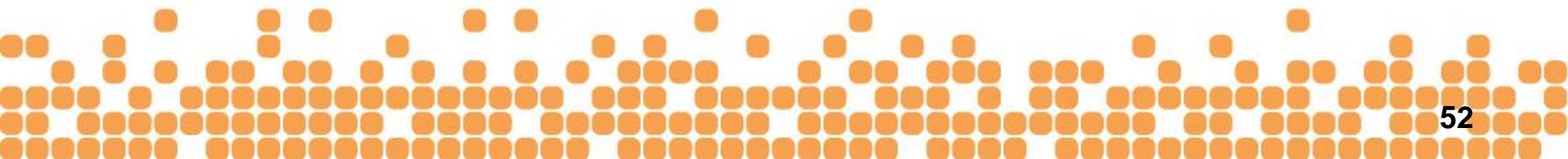
**Teresa Lang**

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(213) 891-6932

# THANK YOU!

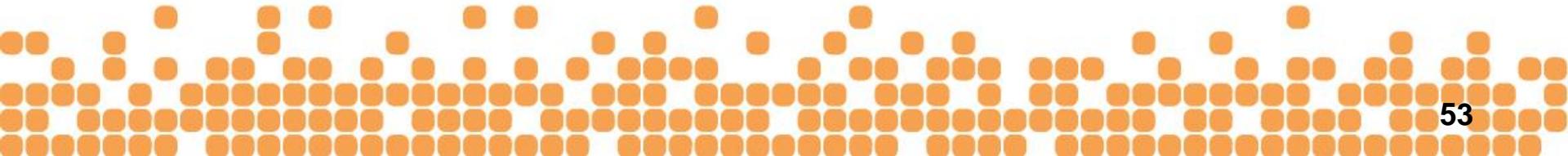
<http://www.climateactionreserve.org/how/protocols/grassland/>





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# ADDITIONAL SLIDES



# Monitoring

- Monitoring to prevent overgrazing
  - Updated grazing management plan
  - Monthly monitoring of grazing activities
    - Livestock category
    - Livestock population
    - Description of rotational activities
- Monitoring project emissions (monthly)
  - Acres burned and cause of fire(s)
  - Purpose, type, and quantity of fossil fuels used
  - Purpose, source, and quantity of electricity used

# Monitoring

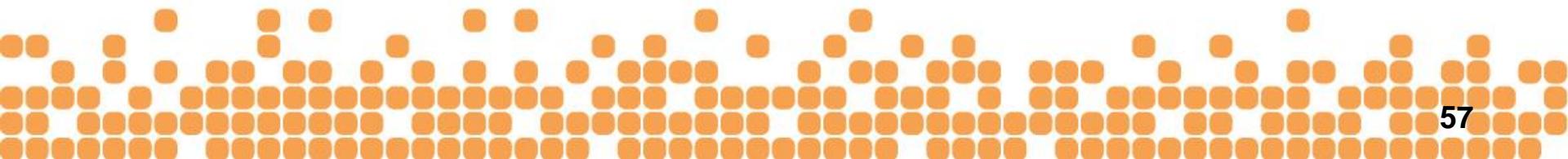
- Monitoring for eligibility
  - Must prove the prior land use stratum that was chosen
  - Historical remote sensing data, conservation program contracts, tax records, etc.
- Monitoring for woody biomass
  - Initial inventory will likely be something similar to the new Urban Forest protocol, combining remote sensing with a carbon-to-canopy ratio
  - If this pool is quantified, it must be maintained
  - Remote sensing for continued verification, updated carbon-to-canopy ratio periodically to account for biomass changes

# Project Implementation Agreement

- An agreement between the Project Operator and the Reserve to maintain the permanence of the Grassland project
- Covers entire project area
- Signed by all Grassland Owners
- Recorded with the deed for the property and transfers to subsequent owners

# Natural grassland management

- Forest protocol includes provisions to ensure that forests not only sequester carbon, but that they also provide natural ecosystems
- Should we include similar provisions in Grassland?
- Example requirements
  - Native species
  - Species diversity
  - Management limitations
- Need good resources to identify the components of “natural” grasslands for different areas



# PST: Stacking: Credits & payments

- Not allowed to participate in a program which give direct credits for avoided GHG emissions
- No known credit programs that would overlap with the GHG quantification for project activities, but some programs provide credits for avoided conversion
- Other than endangered species habitat credits, are there other ecosystem services markets which might provide credits for avoided grassland conversion?

# PST: Stacking: Conservation programs

- If you pursue payment concurrent with project initiation, it is not a problem (same year)
  - No discounting of CRTs due to receipt of payments (i.e. RCPP payment stacking policy; not NMPP payment stacking policy)
  - Some conservation programs can support permanence
- Projects that are already participating in conservation programs prior to initiation are either:
  - (a) not eligible?
  - (b) eligible with 50% discount?
- If you exit the conservation program during the project crediting period, should you be able to cease the discount?
- If you were in a conservation program but your participation ends prior to project initiation, it is not a problem

# PST: Stacking: Programs to consider

- Grassland Reserve Program (GRP)
- Agricultural Conservation Easement Program (ACEP)
- Conservation Reserve Program (CRP)
- Environmental Quality Incentives Program (EQIP)
- Conservation Stewardship Program (CSP)
- Wetlands Reserve Program (WRP)
- Farm and Ranch Lands Protection Program (FRPP)
- Wildlife Habitat Incentive Program (WHIP)
- Others...

# Reporting

- Annual reporting
  - Option for 24-month cycle for projects/aggregates generating less than 25,000 emission reductions annually
- Reporting should cover exactly 12 months at a time, beginning with the project start date
  - We could be flexible on this requirement, offering sub-annual verification
  - The default emission factors are calculated annually
  - It would be possible to pro-rate for sub-annual reporting, if this is important to include

# Verification

- Annual verification
  - Option for 24-month cycle for projects/aggregates generating less than 25,000 emission reductions annually
- Initial verification must include site visit
  - Possibility to employ remote sensing to reduce need for annual site verification
  - Initial verification could cover up to 24 months of reporting
- Remote sensing
  - Remote sensing can be used to confirm that the site has not been converted
  - It could also be used in the inventory of aboveground woody biomass, with some sort of ground-truthing for confirmation