Local Carbon Offsets Project

Webinar
6-10-21

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

Project Overview

- **Funded by The San Diego Foundation**
- **Scope**
  - Identify and Evaluate Local Carbon Offset Opportunities
  - Participate in Regional Offset Activities
- **Outputs**
  - Project Report
    - Background on carbon offset credits
    - Goals and approach
    - Overall results
    - Summary of results by GHG emissions category
  - 7 Appendices with Summary of GHG Emissions Category

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

Project Overview

- **Project Team**
  - Scott Anders, Director, EPIC
  - Joe Kaatz, Staff Attorney, EPIC
  - Bryan Carlson, Law Clerk, EPIC
  - Sara Keys, Law Clerk, EPIC
- **Expert Reviewers**
- **Related Projects Funded by The San Diego Foundation**
  - Quantifying carbon sequestration in salt march ecosystems
    - Zach Plopper, WildCoast
  - Quantifying carbon in natural landscapes
    - Megan Jennings, PhD, SDSU

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

Background on Carbon Offset Credits

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

What is a Carbon Offset Credit?

A "carbon offset credit" is a transferable instrument certified by a government or independent organization to represent an emission reduction or removal of one metric ton of CO_2e.

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

Compliance vs. Voluntary

Type	Purpose	Protocols	Users	Programs
Compliance	Satisfy Regulatory Obligation	CARB Protocols	Covered Entities	American Carbon Registry Climate Action Reserve Verified Carbon Standard
Voluntary	Voluntary Commitment	Offset Credit Program Protocols	Companies Public Agencies	

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

CARB's Offset Credit (Compliance)

- **"CARB Offset Credit"**
  - Tradable compliance instrument issued by ARB
  - 1 metric ton CO_2e reduced or removed
  - Defining characteristics
    - Real
    - Additional
    - Quantifiable
    - Permanent
    - Verifiable, and
    - Enforceable

CALIFORNIA
AIR RESOURCES BOARD

Source: (17 CCR § 95802 (a))

CARB's Two-Part Test for Additionality (Compliance)

- "**Additional**"
  - GHG reductions or removals that
    - (1) exceed those otherwise required by law, regulation or legally binding mandate, and
    - (2) exceed any greenhouse gas reductions or removals that would otherwise occur in a conservative business-as-usual scenario.

CALIFORNIA
AIR RESOURCES BOARD

Source: (17 CCR § 95802 (a))

CARB's Two-Part Test for Additionality (Compliance)

- **"Additional"**
  - GHG reductions or removals that
    - (1) exceed those otherwise required by law, regulation or legally binding mandate, and
    - (2) exceed any greenhouse gas reductions or removals that would otherwise occur in a conservative business-as-usual scenario.

CALIFORNIA
AIR RESOURCES BOARD

Legal Requirement Test

Common Practice Test

Source: (17 CCR § 95802 (a))

Carbon Offset Credit Programs

Organization	Standard	Accounting Methods	Registry	GHG Unit
Winrock International	The American Carbon Registry (ACR) Standard	Methodologies	American Carbon Registry	Emission Reduction Tons (ERT)
Climate Action Reserve (CAR)	Reserve Offset Program Manual	Protocols	Reserve Registry	Climate Reserve Tonnes (CRT)
Verra	Verified Carbon Standard (VCS)	Methodologies	Verified Carbon Standard Registry	Verra Carbon Units (VCU)

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

American Carbon Registry (ACR)

APPROVED METHODOLOGIES

Sectoral Scope	Methodology	Version
1. GHG emission reductions from fuel combustion	Truck Stop Electrification	1.1
2. GHG emission reductions from industrial processes	Advanced Refrigeration Systems	2.0
2. GHG emission reductions from industrial processes	Certified Reclaimed HFC Refrigerants	1.1
2. GHG emission reductions from industrial processes	Destruction of Ozone Depleting Substances and High-GWP Foam	1.1
2. GHG emission reductions from industrial processes	Transition to Advanced Formulation Blowing Agents in Foam Manufacturing and Use	2.0
3. Land Use, Land Use Change and Forestry	Afforestation and Reforestation of Degraded Lands	1.2
3. Land Use, Land Use Change and Forestry	Avoided Conversion of Grasslands and Shrublands to Crop Production	2.0
3. Land Use, Land Use Change and Forestry	Compost Additions to Grazed Grasslands	1.0
3. Land Use, Land Use Change and Forestry	Improved Forest Management (IFM) on Non-Federal U.S. Forestlands	1.3
3. Land Use, Land Use Change and Forestry	Restoration of California Deltaic and Coastal Wetlands	1.1
3. Land Use, Land Use Change and Forestry	Restoration of Pocosin Wetlands	1.0
4. Carbon Capture and Storage	Carbon Capture and Storage Projects	1.0
6. Waste Handling and Disposal	Capturing and Destroying Methane from Coal and Trona Mines in North America	1.0
6. Waste Handling and Disposal	Re-refining Used Lubricating Oils	1.0
6. Waste Handling and Disposal	Recycling of Transformer Oil	1.0

Climate Action Reserve (CAR)

Protocols

Protocols	Active Version	Date Issued	Development Status
Adipic Acid Production	1.0	September 30, 2020	Approved
Canada Grassland	1.0	October 16, 2019	Approved
Coal Mine Methane	1.1	October 26, 2012	Approved
Forest	5.0	October 16, 2019	Approved
Grassland	2.1	February 13, 2020	Approved
Mexico Boiler Efficiency	1.0	November 1, 2016	Approved
Mexico Forest	2.0	March 30, 2020	Approved
Mexico Landfill	1.1	September 13, 2011	Approved
Mexico Livestock	2.0	September 29, 2010	Approved
Mexico Ozone Depleting Substances	1.0	April 28, 2015	Mexico Halocarbon Protocol now available for public review and comment; comments due May 14
Nitric Acid Production	2.2	April 18, 2019	Approved
Nitrogen Management	2.0	October 17, 2018	Approved
Organic Waste Composting	1.1	July 29, 2013	Approved
Organic Waste Digestion	2.1	January 16, 2014	Approved
Ozone Depleting Substances	2.0	June 27, 2012	Approved
Rice Cultivation	1.1	June 3, 2013	Approved
Soil Enrichment	1.0	September 30, 2020	Approved
Urban Forest Management	1.1	April 18, 2019	Approved
Urban Tree Planting	2.0	June 25, 2014	Approved
U.S. Landfill	5.0	April 24, 2019	Approved
U.S. Livestock	4.0	January 23, 2013	Approved

Other Considerations

- Offset Credits Issued on *Ex Post* Basis
  - Only after emissions reductions or removals are verified
- Alternatives to Offset Credits
  - CAR Climate Forward Program
    - Not offset credits
    - Issues Forward Mitigation Units (FMU)
    - FMUs issued *ex ante*
      - Future GHG impacts recognized before they occur
    - Have been used for CEQA compliance
      - Newhall Ranch

CLIMATE FORWARD

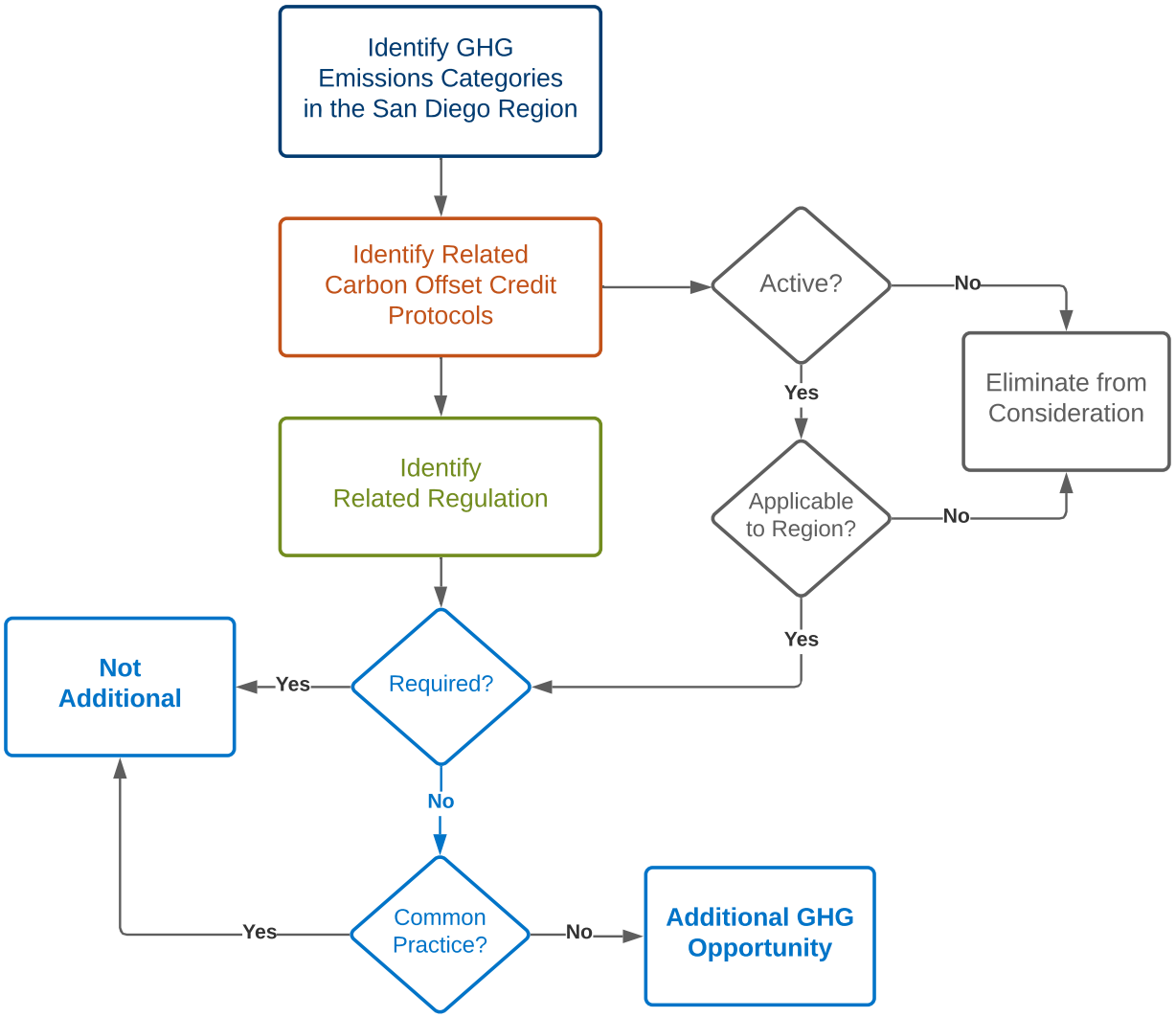
Project Goals and Approach

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

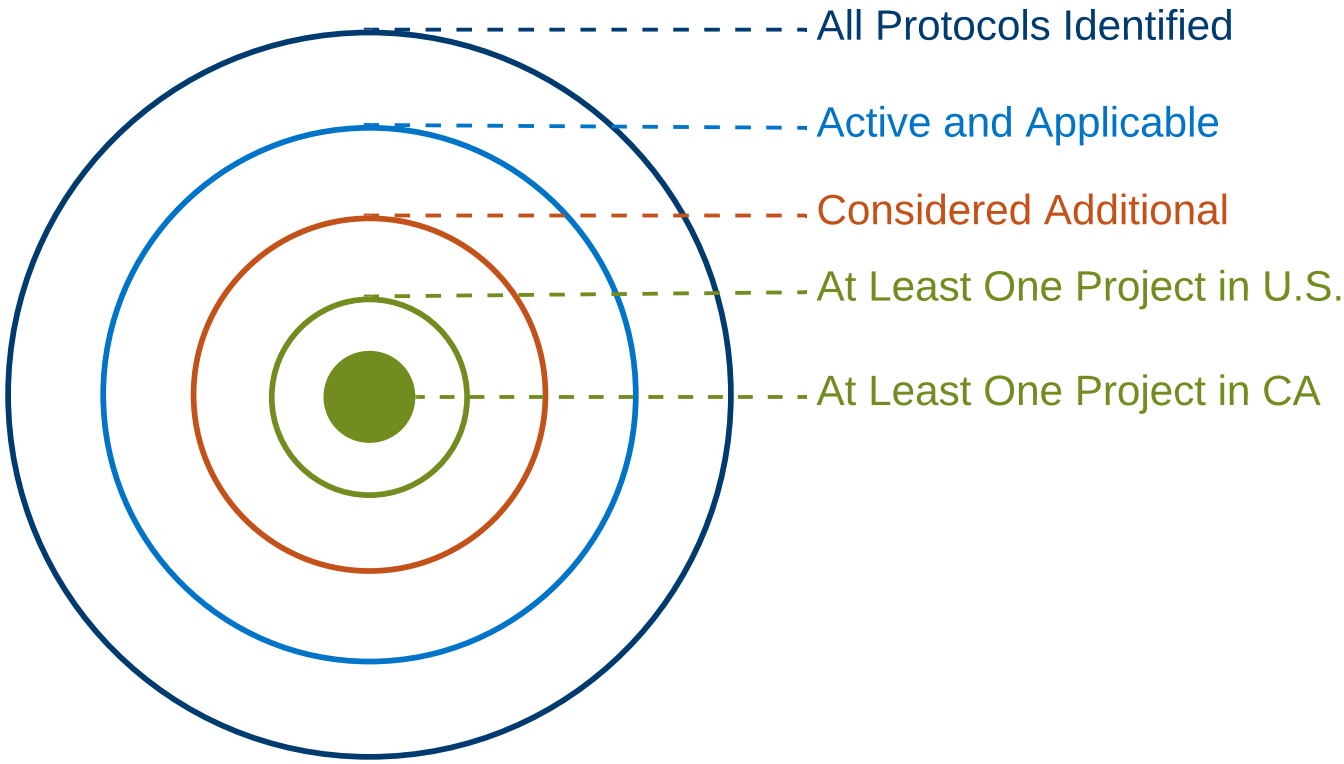
Project Goal

Identify opportunities to develop projects in the San Diego region to reduce or remove GHG emissions that could be used as carbon offset credits from existing protocols.

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW


Identify GHG Emissions Categories in the San Diego Region
Identify Related Carbon Offset Credit Protocols
Active?
No
Eliminate from Consideration
Yes
Identify Related Regulation
Applicable to Region?
No
Yes
Not Additional
Yes
Required?
No
Common Practice?
Yes
No
Additional GHG Opportunity

Screening Process



Project Terminology

GHG Emissions Category →	**WASTE**
GHG Emissions Subcategory →	**Solid Waste**
Protocol Category →	**Landfill Gas**
Protocol →	ACR Landfill Gas Destruction and Beneficial Use Projects
	CAR Mexico Landfill
	CAR U.S. Landfill
	Verra ACM0001: Flaring or Use of Landfill Gas, Version 19.0
	Verra AMS-III.G.: Landfill Methane Recovery, Version 10.0

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

GHG Emissions Categories

GHG Category - Subcategory	Included in Report?	Reasoning
Agriculture - All Subcategories	Yes	Many protocols and many projects in U.S.
Energy - Civil Aviation	No	One protocol, minimal emissions
Energy - Electricity and Natural Gas	Yes	High emissions and medium number of protocols
Energy - Off-road Transportation	No	One protocol and no projects in U.S.
Energy - On-road Transportation	Yes	High emissions
Energy - Other Fuels	No	No protocols
Energy - Rail	No	No protocols
Energy - Water*	Yes	Interest in water conservation and efficiency
Industrial Processes and Product Use - All	Yes	Many protocols and highest number of projects in U.S.
Waste - Solid Waste	Yes	High number of projects in U.S
Waste - Wastewater Process Emissions	Yes	Similar emissions characteristics as solid waste
Natural and Working Lands - All	Yes	Highest number of protocols and many projects in U.S.

*Water is not an emissions subcategory of Energy but is categorized here because GHG reductions from water conservation result from reductions in energy use.

Project Results

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

Screening Process - Protocols

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

Screening Process - Protocols

Number of Protocols

GHG Emissions Category	All Protocols Identified	Active, Applicable	And Additional	And at Least 1 Project in U.S.	And at Least 1 Project in CA
Natural and Working Lands	51	28	28	11	5
Industrial Processes and Product Use	36	12	12	8	1
Agriculture	28	12	12	6	4
On-road Transportation	6	5	4	1	0
Civil Aviation	1	1	1	1	1
Electricity and Natural Gas	30	11	0	0	0
Solid Waste	11	9	0	0	0
Wastewater Process emissions	2	2	0	0	0
Off-road Transportation	1	1	0	0	0
Total	**166**	**81**	**57**	**27**	**11**

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

Screening Process – Projects and Protocols

Active, Applicable, Additional Protocols with at Least 1 Project in the U.S

	Number of Projects			
GHG Emissions Category/ Protocol Category	**US**	**CA**	**SD Region**	**Number of Protocols**
Agriculture	**167**	**23**	**0**	**6**
Manure Methane Reduction	167	23	0	6
Civil Aviation	**1**	**1**	**0**	**1**
Engine Washing	1	1	0	1
Industrial Processes and Product Use	**248**	**2**	**0**	**8**
Lubricant Management	4	0	0	2
ODS Management	244	2	0	6
Natural and Working Lands	**244**	**86**	**1**	**11**
Forestry	228	85	1	7
Grasslands	14	0	0	2
Soil Management	1	0	0	1
Wetlands	1	1	0	1
On-road Transportation	**2**	**0**	**0**	**1**
Alternative Fuels	2	0	0	1
Total	**662**	**112**	**1**	**27**

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

Active, Applicable, Additional Protocols with at Least 1 Project in the CA

	Number of Projects		
Protocol [Emissions Category]	**US**	**CA**	**SD Region**
CAR U.S. Forest Projects Compliance Offset Protocol (CARB) [Natural and Working Lands]	90	49	0
ACR U.S. Forest Projects Compliance Offset Protocol (CARB) [Natural and Working Lands]	89	16	0
CAR Ozone Depleting Substances Compliance Offset Protocol (CARB) [Industrial]	82	2	0
CAR Livestock Projects Compliance Offset Protocol (CARB) [Agriculture]	72	14	0
CAR U.S. Livestock [Agriculture]	64	6	0
CAR Forest [Natural and Working Lands]	41	19	1
VCS AMS-III.Y.: Methane Avoidance through Separation of Solids from Wastewater or Manure Treatment* [Agriculture and Waste]	8	2	0
CAR Organic Waste Digestion* [Agriculture and Waste]	2	1	0
ACR Afforestation and Reforestation of Degraded Lands [Forestry]	1	1	0
ACR Restoration of California Deltaic and Coastal Wetlands [Natural and Working Lands]	1	1	0
VCS VM0013 Calculating Emission Reductions from Jet Engine Washing, v1.0 [Civil Aviation]	1	1	0
Total	**451**	**112**	**1**

*Protocol included in more than one category.

Key Findings

- **California is a Heavily Regulated State**
  - Upstream Regulations
    - Renewable Portfolio Standard
  - Economy-wide Approach
    - Cap-and-Trade Regulation
- **Limited Opportunities to Use Existing Protocols**
  - Offset credit programs already identify additional opportunities
  - Some opportunities exist but more work is needed to determine project feasibility
  - Most opportunity in:
    - Agriculture
    - Industrial
    - Natural and Working Lands

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

Key Findings

- **Limited Potential in Opportunity Areas**
  - Related agricultural activity (livestock and field crops)
  - Area related to forestry, wetlands, etc.
- **One Carbon Offset Credit Project in the San Diego Region**
  - Cuyamaca Rancho State Park (CRSP) Reforestation Project
- **Opportunities Likely to Decrease Over Time as California Regulation Expands**

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

Possible Next Steps

- Detailed Analysis of Carbon Offset Credit Protocols Considered Additional
  - Cost, Scale of Opportunity, etc.
- Develop a More Detailed Understanding of the Demand for Offset Credits
  - Carbon Neutrality, CAPs, and Voluntary Commitments
- Evaluate New Methods and Protocols (e.g., Blue Carbon, Chaparral)
- Assess Options for GHG Projects that DO NOT Use Existing Protocols
  - Is it possible to use direct GHG reductions in lieu of offset credits?
- Assess Options for a Regional Carbon Offsetting Program
  - What might a regional program look like?

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

Scott Anders
scottanders@sandiego.edu

Joe Kaatz
kaatzj-11@sandiego.edu

Bryan Carlson
bcarlson@sandiego.edu

Sara Keys
kkeys@sandiego.edu

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW