

# EVALUATION OF US FOREST CARBON OFFSET PROGRAM PARTICIPATION

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Presented at: 2021 SAF National Convention

Session **V3-5: Carbon and Climate Matters**

November 6, 2021

# ABOUT ME

- UNIVERSITY OF IDAHO
- B.S. FOREST MANAGEMENT (FALL 2021)
- POLICY ANALYSIS GROUP
- INTERNSHIPS
  - POTLATCHDELTAIC
  - FOREST SERVICE
  - UNIVERSITY OF IDAHO RESEARCH EXTENSION LAB

## RESEARCH FUNDING

Adele Berklund Undergraduate Research Scholar Award



# OUTLINE

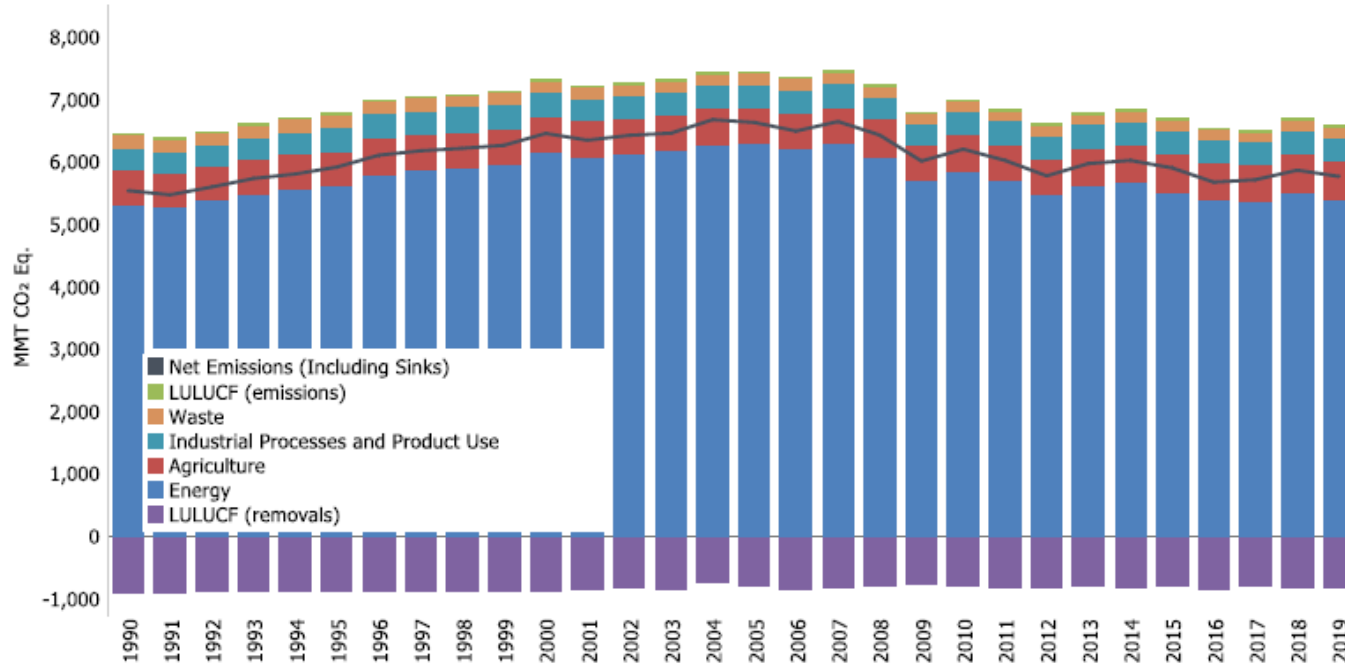
- Goal
- State of US GHG accounts
- What are offsets? – And - who would do such a thing?
- Dig into the projects
  - How many projects – and what type?
  - Where?
  - How many credits?
- Looking forward
  - Debs
  - Avoided conversion vs removals
  - Harvesting



# WHERE WE'VE BEEN AND WHERE WE ARE HEADING

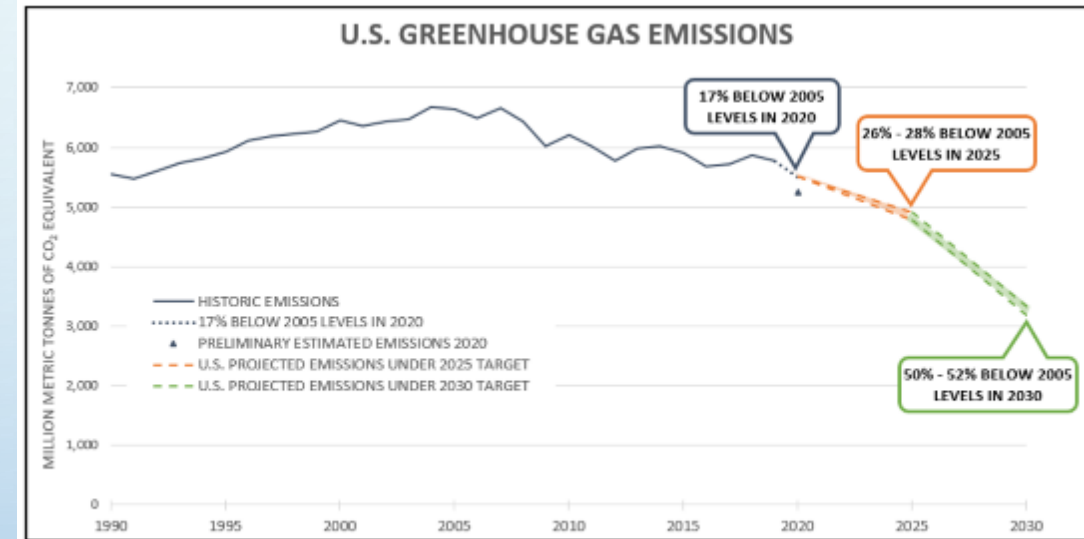
## EPA GHG Inventory

Figure 2-4: U.S. Greenhouse Gas Emissions and Sinks by Chapter/IPCC Sector



EPA. 2021. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019. Washington, D.C. Available online at: <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2019>

## UNFCCC - US Nationally Determined Contribution



United States Historic Emissions and Projected Emissions Under 2030 Target

[https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/United\\_States\\_of\\_America\\_First/United\\_States\\_NDC\\_April\\_21\\_2021\\_Final.pdf](https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/United_States_of_America_First/United_States_NDC_April_21_2021_Final.pdf)

# WHAT ABOUT NON-FEDERAL ACTION

## Corporations

amazon About Environment People Governance

Homepage > About > The Climate Pledge

### The Climate Pledge

Amazon is committed to building a sustainable business for our customers and the planet. In 2019, Amazon co-founded The Climate Pledge—a commitment to be net zero carbon across our business by 2040, 10 years ahead of the Paris Agreement.

Learn More

973

with science-based targets

1929

companies taking action

906

commitments to 1.5°C



SCIENCE  
BASED  
TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Microsoft | Official Microsoft Blog Microsoft On the Issues The AI Blog Transform

### Microsoft will be carbon negative by 2030

Jan 16, 2020 | Brad Smith - President



Microsoft President Brad Smith, Chief Financial Officer Amy Hood and CEO Satya Nadella prepare to be carbon negative by 2030. (Jan. 15, 2020/Photo by Brian Smale)

Walmart Our Story Newsroom Global Responsibility Investors Suppliers Ask Walmart

### Walmart Sets Goal to Become a Regenerative Company



Press Kit

Sept. 21, 2020

World's largest retailer targets zero emissions by 2040 and aims to protect, manage or restore at least 50 million acres of land and one million square miles of ocean by 2030.

Building on more than 15 years of sustainability leadership, Walmart today announced it is doubling down on addressing the growing climate crisis by targeting zero emissions across the company's global operations by 2040. Walmart and the Walmart Foundation are also committing to help protect, manage or restore at least 50 million acres of land and one million square miles of ocean by 2030 to help combat the cascading loss of nature threatening the planet.



"We want to play an important role in transforming the world's supply chains to be regenerative. We face a growing crisis of climate change and nature loss, and we all need to take action with urgency. For 15 years, we have been partnering to do the work and continually raising our sustainability ambitions across climate action, nature, waste and people. The commitments we're making today not only aim to decarbonize Walmart's global operations, they also put us on the path to becoming a regenerative company – one that works to restore, renew and replenish in addition to preserving our planet, and encourages others to do the same."

Doug McMillon, President and CEO - Walmart

#### Additional News



Walmart's Regenerative Approach: Going Beyond Sustainability

September 21, 2020



Walmart and Schneider Electric Announce Groundbreaking Collaboration to Help Suppliers Access Renewable Energy

September 10, 2020



Grazing Toward a Sustainable Beef Supply Chain

August 7, 2020



# WHAT ABOUT NON-FEDERAL ACTION

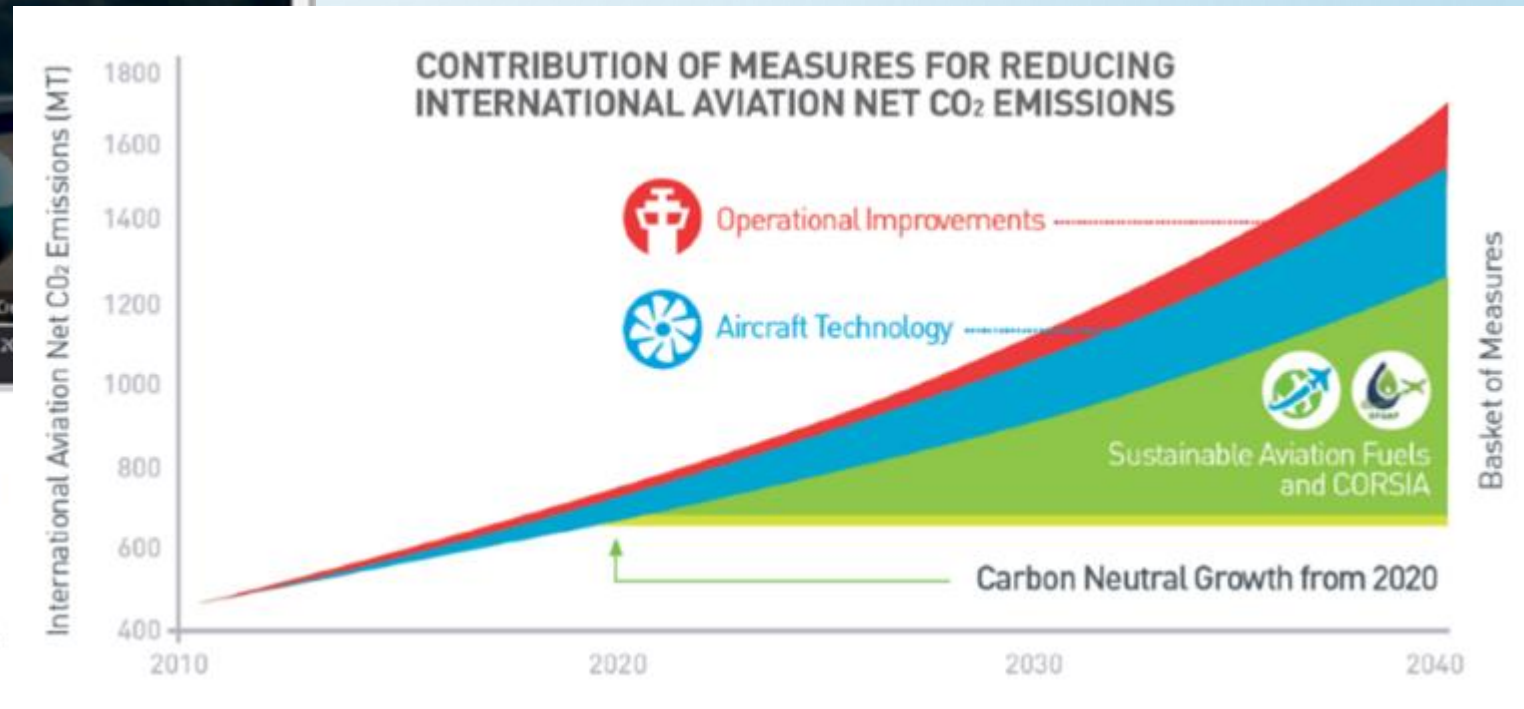
## Airlines



Airlines around the world have recently begun to monitor their CO<sub>2</sub> emissions as part of a UN climate deal.

Last month marked the first step of the UN's "Corsia" scheme, which aims to ensure any rise in international aviation emissions above 2020 levels are offset elsewhere.

The scheme was agreed by 192 countries in 2016 through the UN's aviation agency. It is significant because of the aviation sector's large and rapidly increasing CO<sub>2</sub> emissions. If aviation were a country, it would be the sixth largest in the world, between Japan and Germany.



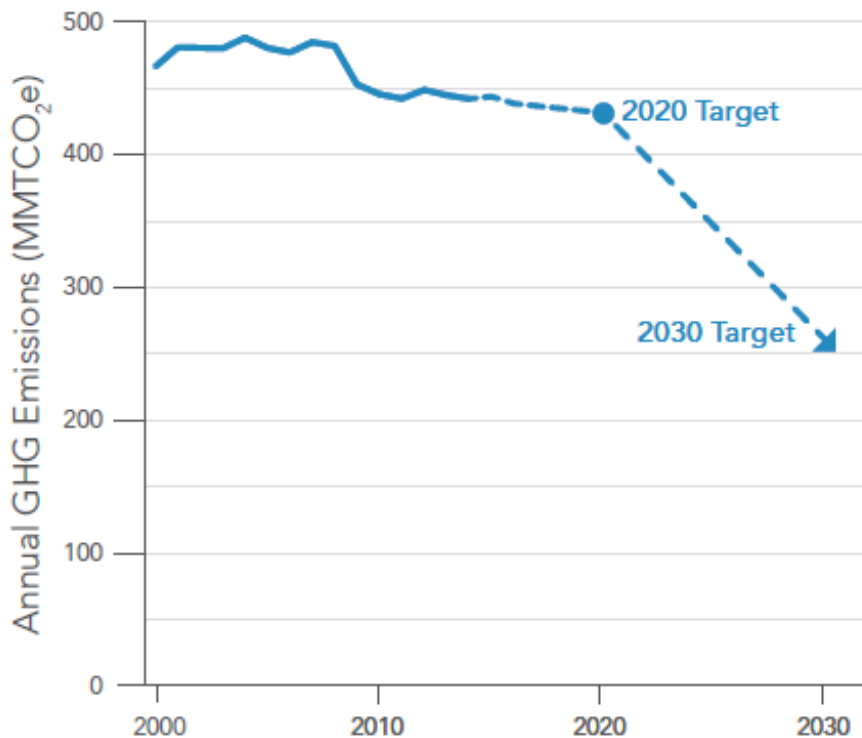
# WHAT ABOUT NON-FEDERAL ACTION



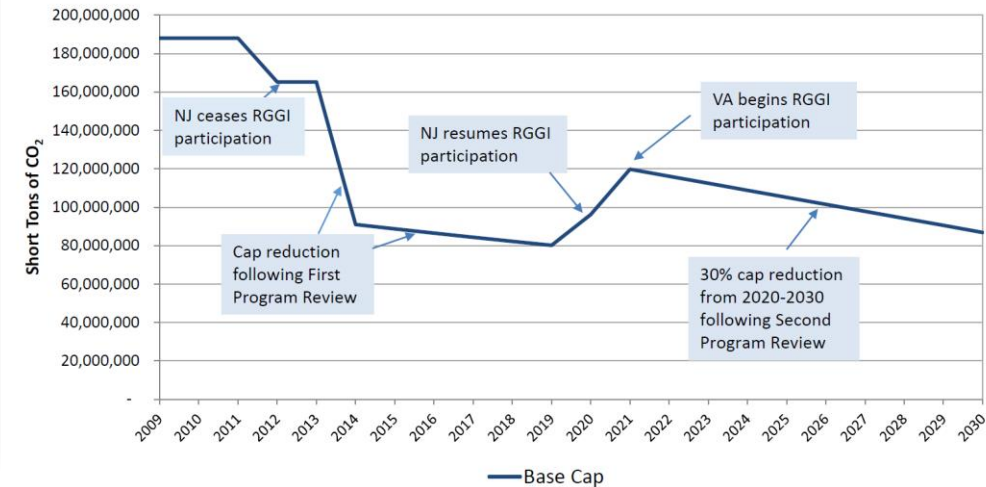
## State/Regional

AB 32 Global Warming Solutions Act of 2006

### CALIFORNIA'S PATH FORWARD



### RGGI CO<sub>2</sub> Emissions Cap



[https://www.rggi.org/sites/default/files/Uploads/Program-Review/9-28-2021/RGGI Listening Session 1 Presentation.pdf](https://www.rggi.org/sites/default/files/Uploads/Program-Review/9-28-2021/RGGI%20Listening%20Session%201%20Presentation.pdf)

<https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan>

# WHY CARBON OFFSETS ARE IMPORTANT

- Offsets are part of all these programs
  - *When you pay someone else to reduce their emissions in lieu of you reducing yours*



Why?

- The technology doesn't exist to reduce emissions
  - Or does not meet the scale of demand
- As a cost containment mechanism







# PRINCIPLES

## **ADDITIONAL**

Project must demonstrate how it is going to increase carbon stocks in the project area above and beyond what would have happened without the project.

## **PERMANENCE**

Must show project is permanent for a period of time

## **VERIFIABLE**

Projects must be verified through a third-party, sites are visited every six years and inventory reports are verified.

## **LEAKAGE**

Occurs when the GHG reductions in one area results in the increase of GHG reductions in another area.



# FOREST PROJECTS TYPES

## Improved forest management

IFM

Forest management that increases and maintains a certain level of carbon stocking

## Reforestation & afforestation

R

Converting non-forested land into forested land

## Avoided conversion

AC

Forests prevented from being converted to non-forested land

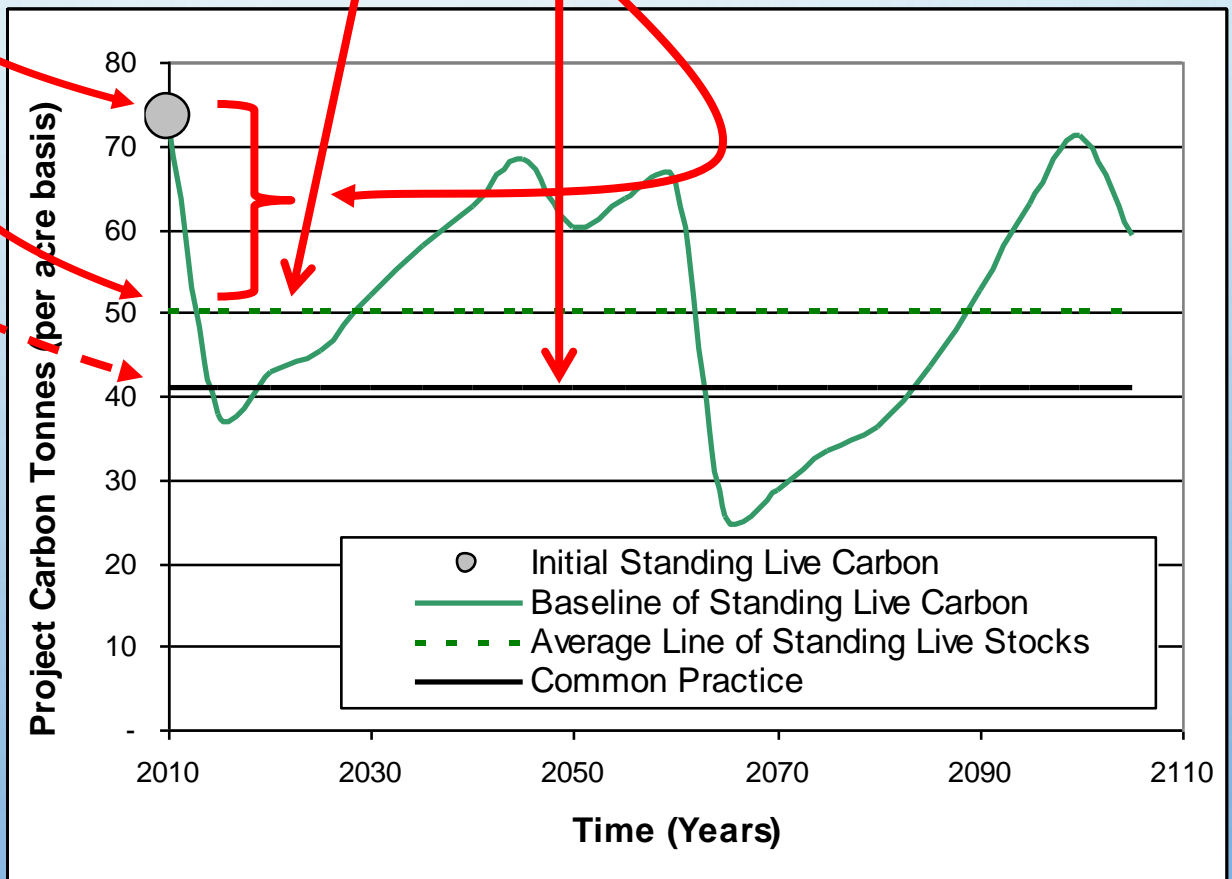


# HOW ARB IFM PROJECTS WORK

**Avoided Emission Offsets:**  
Initial credits issued, usually larger number because of previously established timber

**Removal Offsets:** Credits that are issued yearly due to yearly growth of the project area

1. Landowner gets 100% of carbon credits for carbon above Common Practice (legal and economically viable of course)
2. Average of the 300 year old forests for hydrology / forest type
3. Common Practice Line
4. No average of the 300 year old forests for hydrology / forest type
5. Landowner gets 100% of carbon credits for carbon above Common Practice (legal and economically viable of course)
6. Average of the 300 year old forests for hydrology / forest type





# HOW PROJECT IS DEVELOPED



Landowner

Developer

Verifier

Registry



Verified Again

Credits Issued





# RESULTS

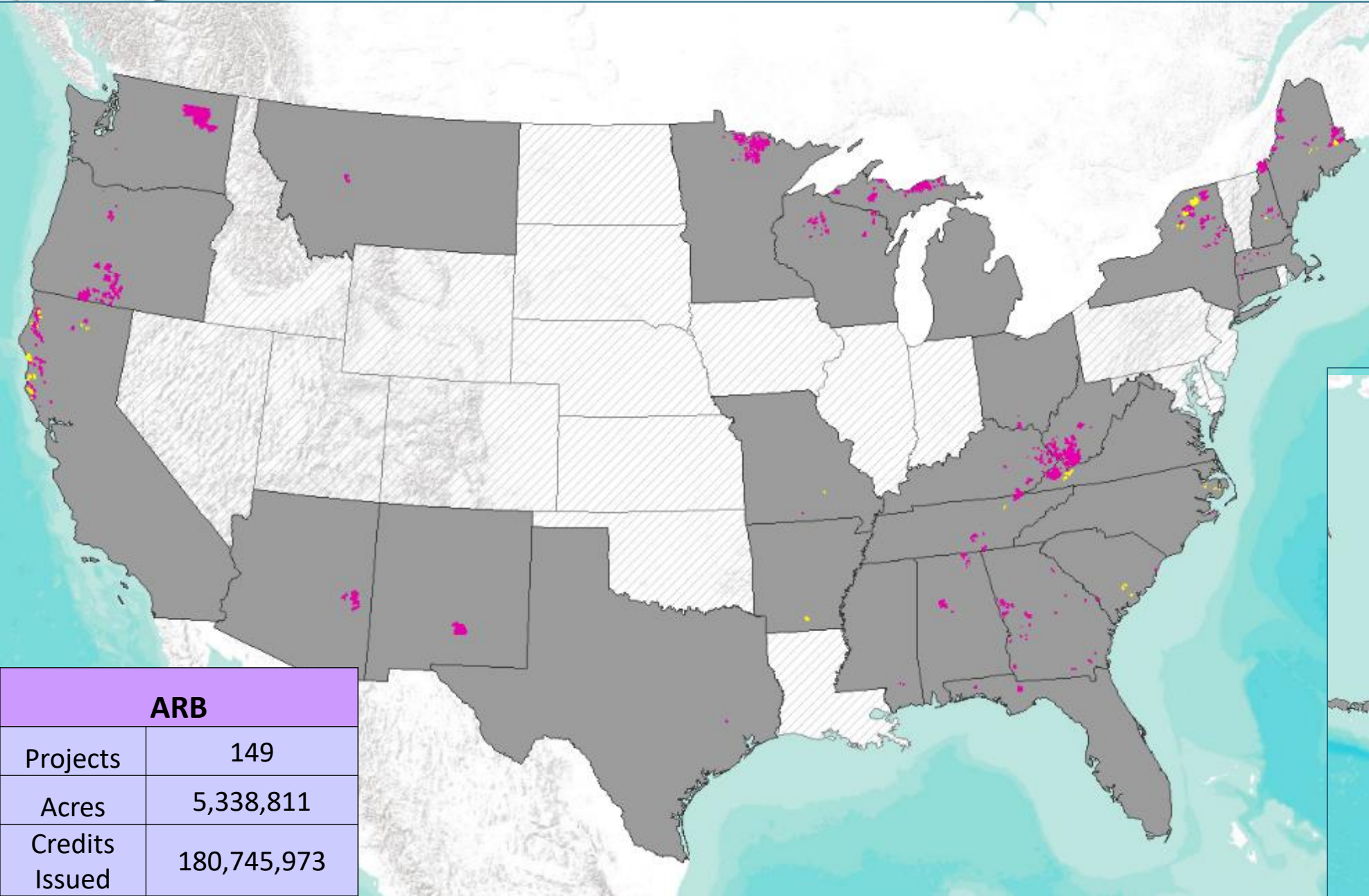
<b>Total</b>	
Projects	192
Acres	5,794,736
Credits Issued	192,754,683

<b>ARB</b>	
Projects	149
Acres	5,338,811
Credits Issued	180,745,973



<b>Voluntary</b>			
	<b>CAR</b>	<b>ACR</b>	<b>VCS</b>
Projects	11	23	9
Acres	43,966	320,799	91,160
Credits Issued	3,066,334	8,755,048	187,328

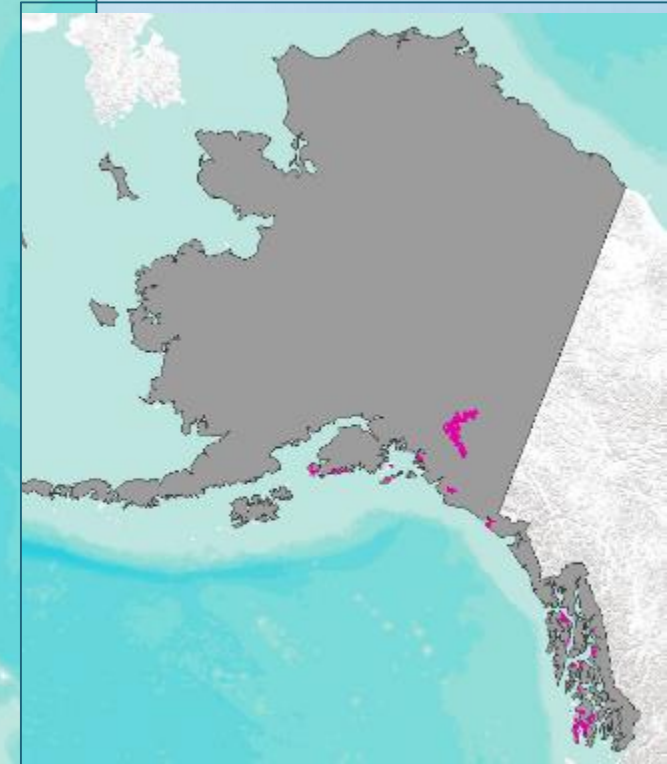


# ARB



## Legend

-  ARB Early Action
-  ARB Compliance

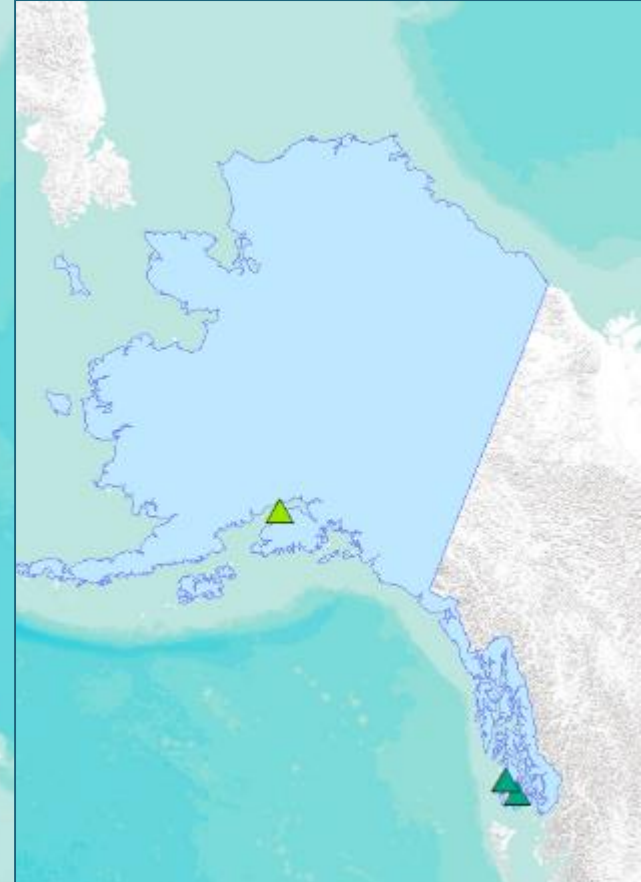
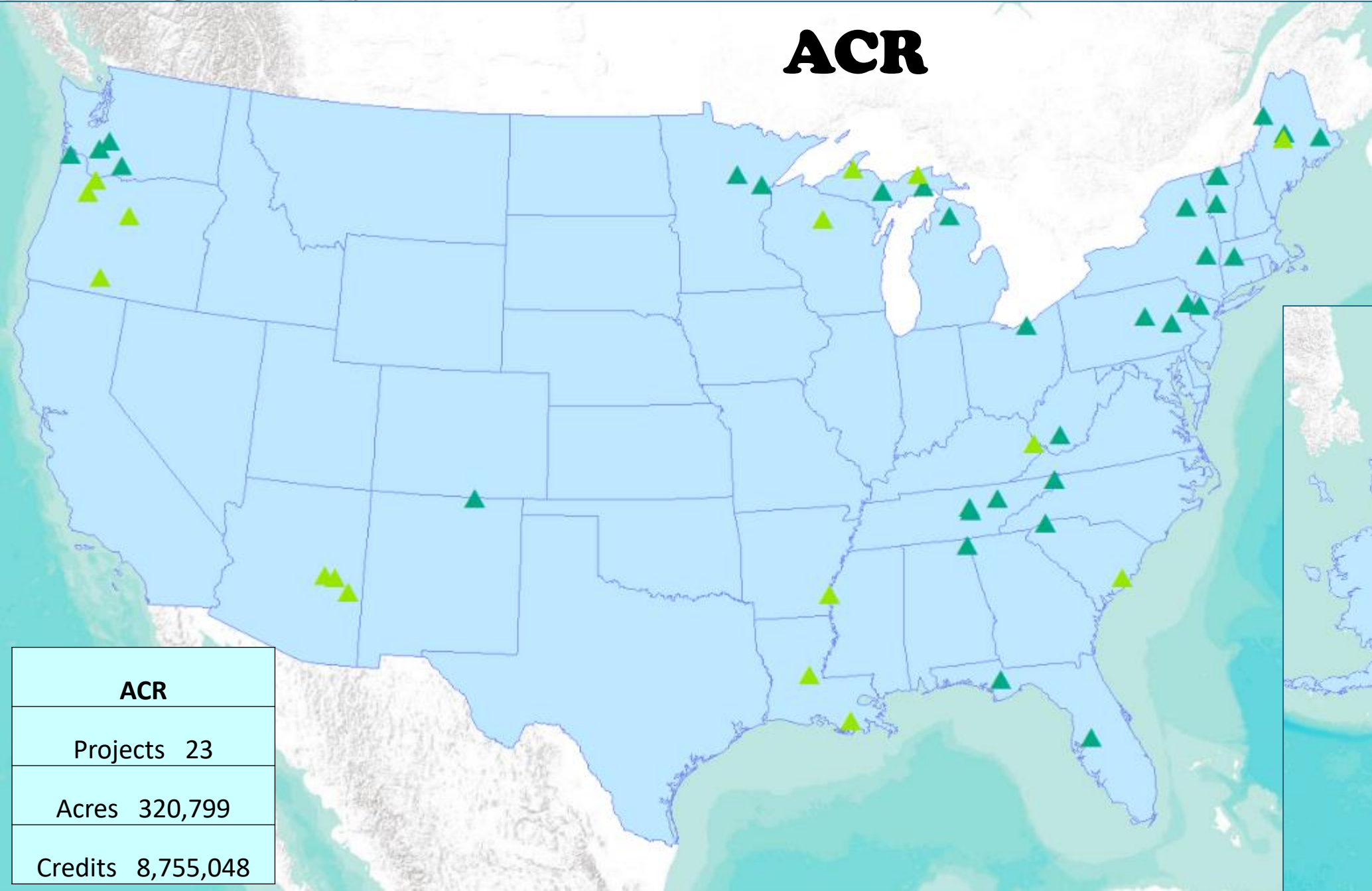


ARB	
Projects	149
Acres	5,338,811
Credits Issued	180,745,973

# ACR

## Legend

- ▲ ACR Listed
- ▲ ACR



### ACR

Projects 23

Acres 320,799

Credits 8,755,048



# VCS



<b>VCS</b>
Projects 9
Acres 91,160
Credits 187,328



# CAR

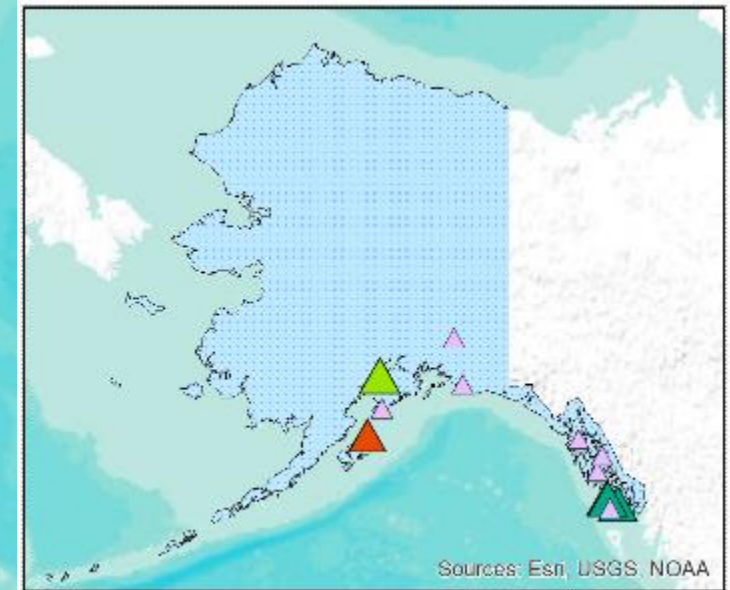
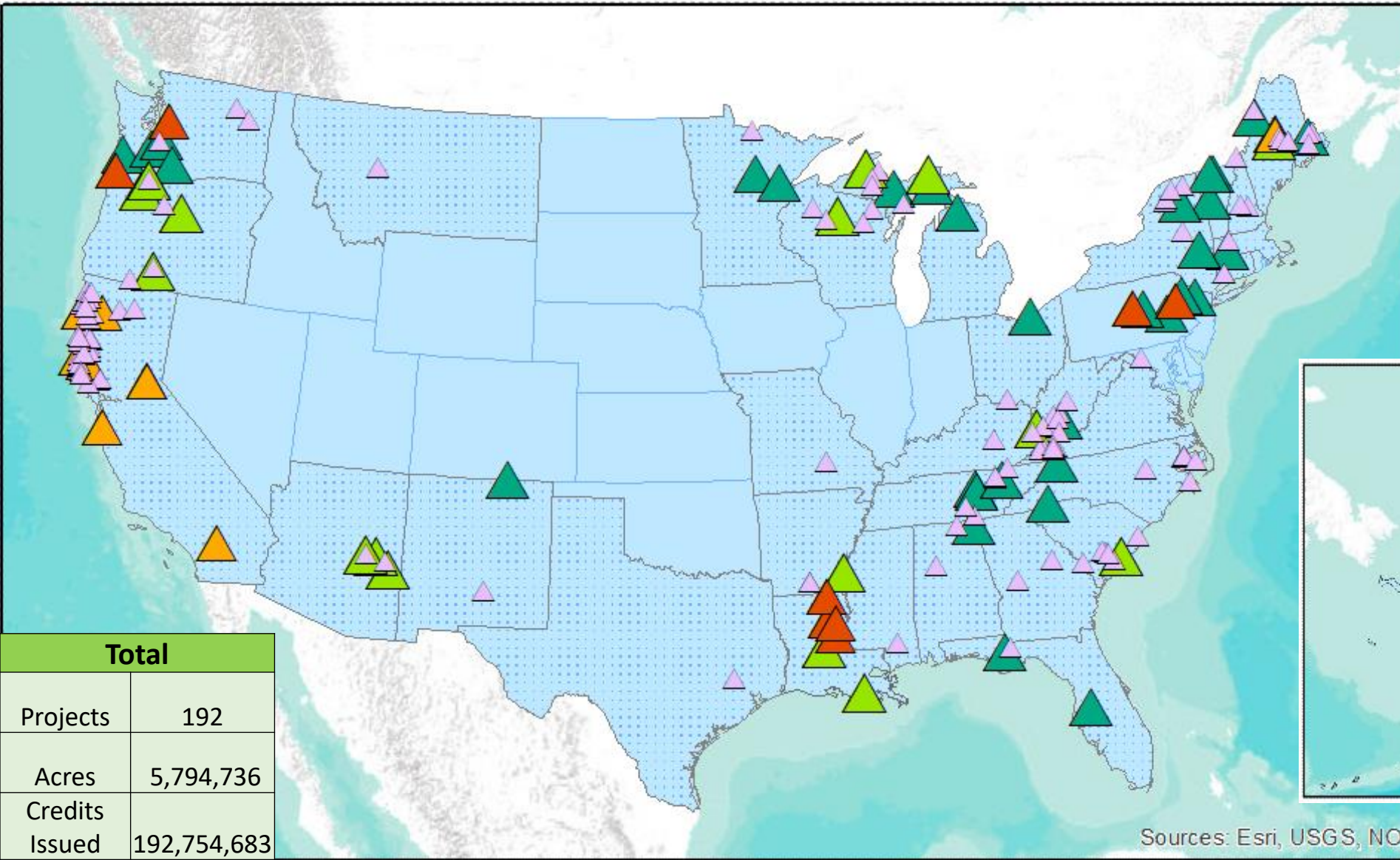


<b>CAR</b>
Projects 11
Acres 43,966
Credits 3,066,334

29 out 50 States have forest carbon projects

## Legend

- ▲ ARB
- ▲ CAR
- ▲ ACR Listed
- ▲ ACR
- ▲ VERRA



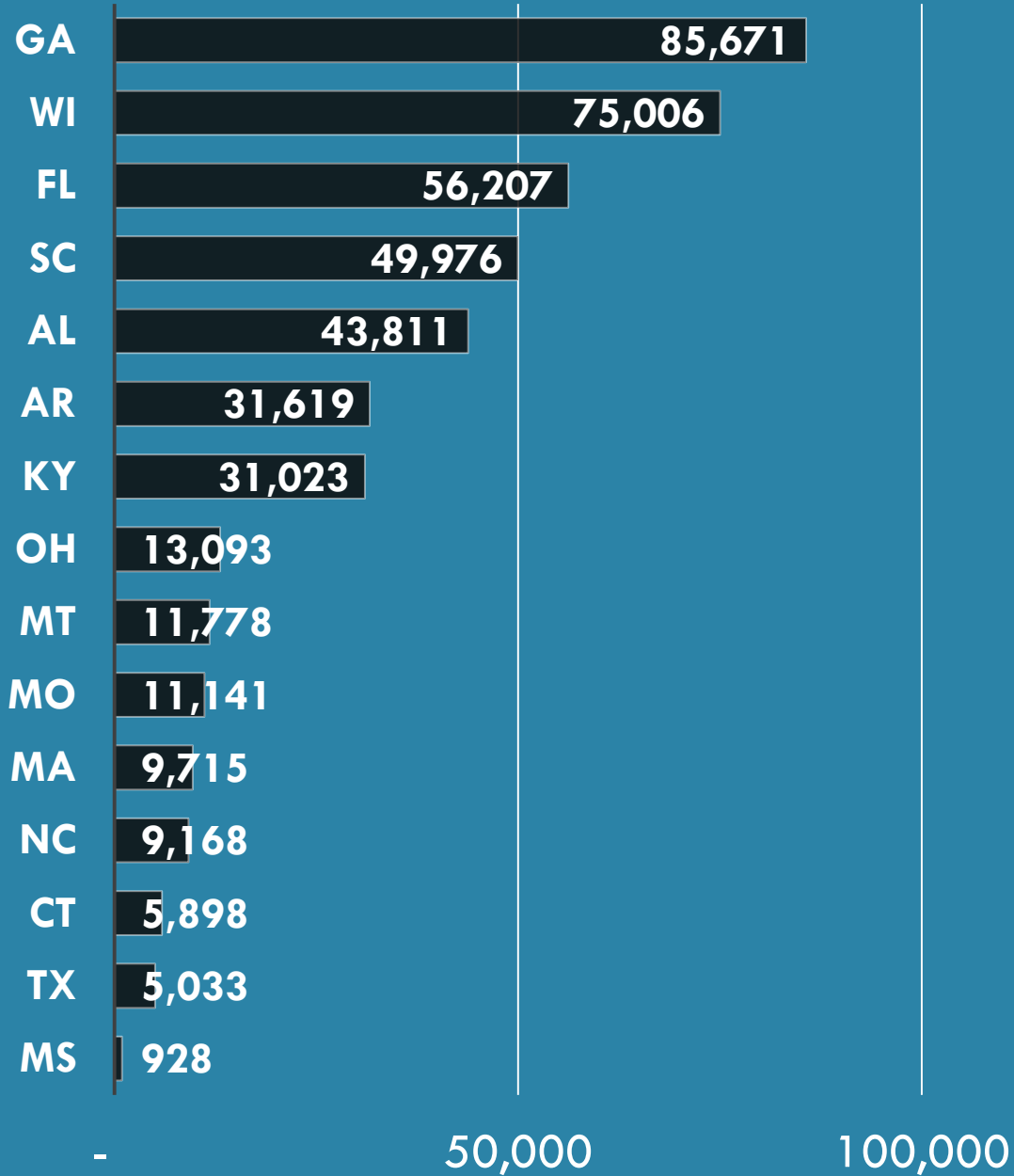
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Projects	192
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Sources: Esri, USGS, NOAA

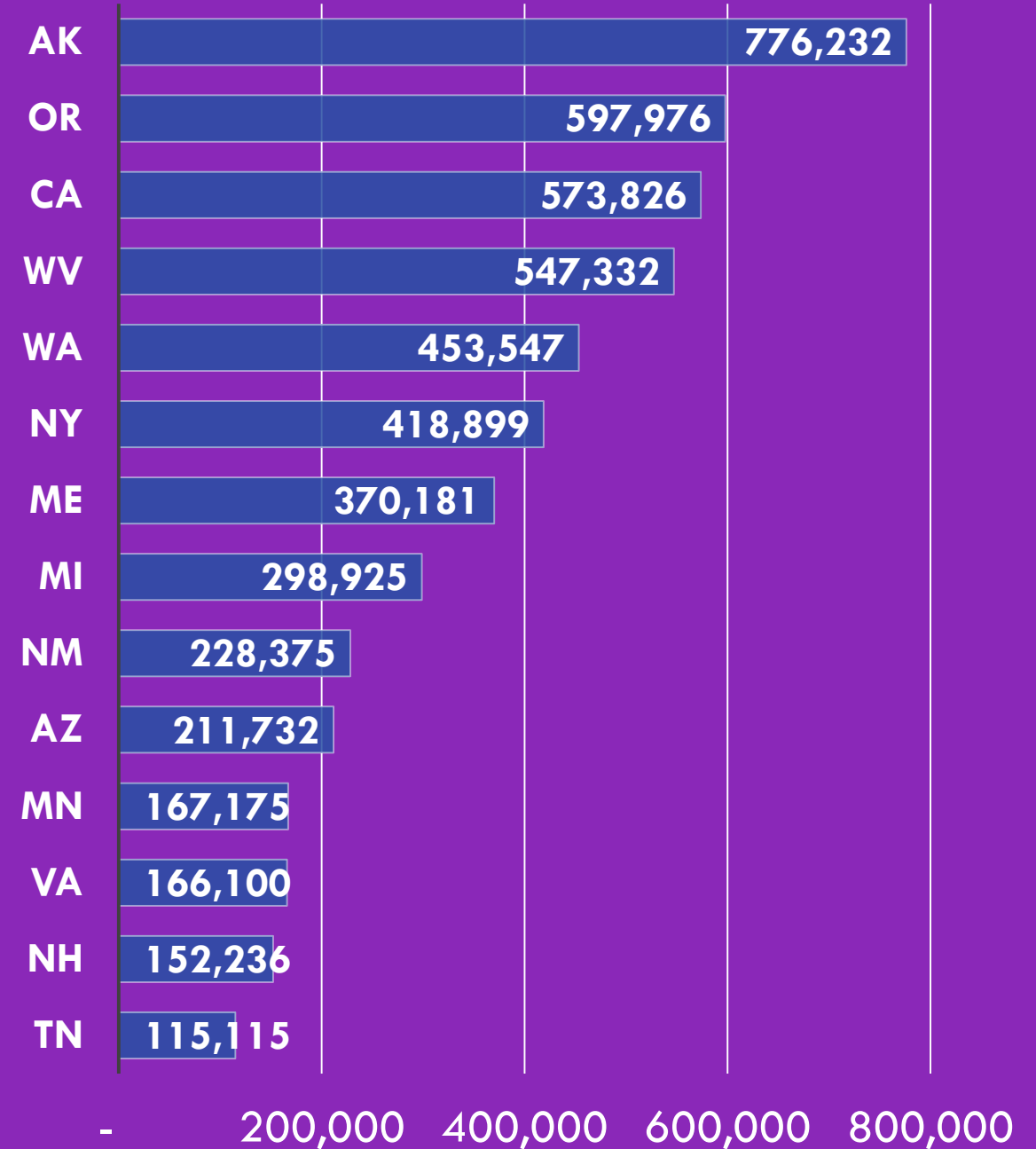
Sources: Esri, USGS, NOAA



## Acres per State: Under 100,000

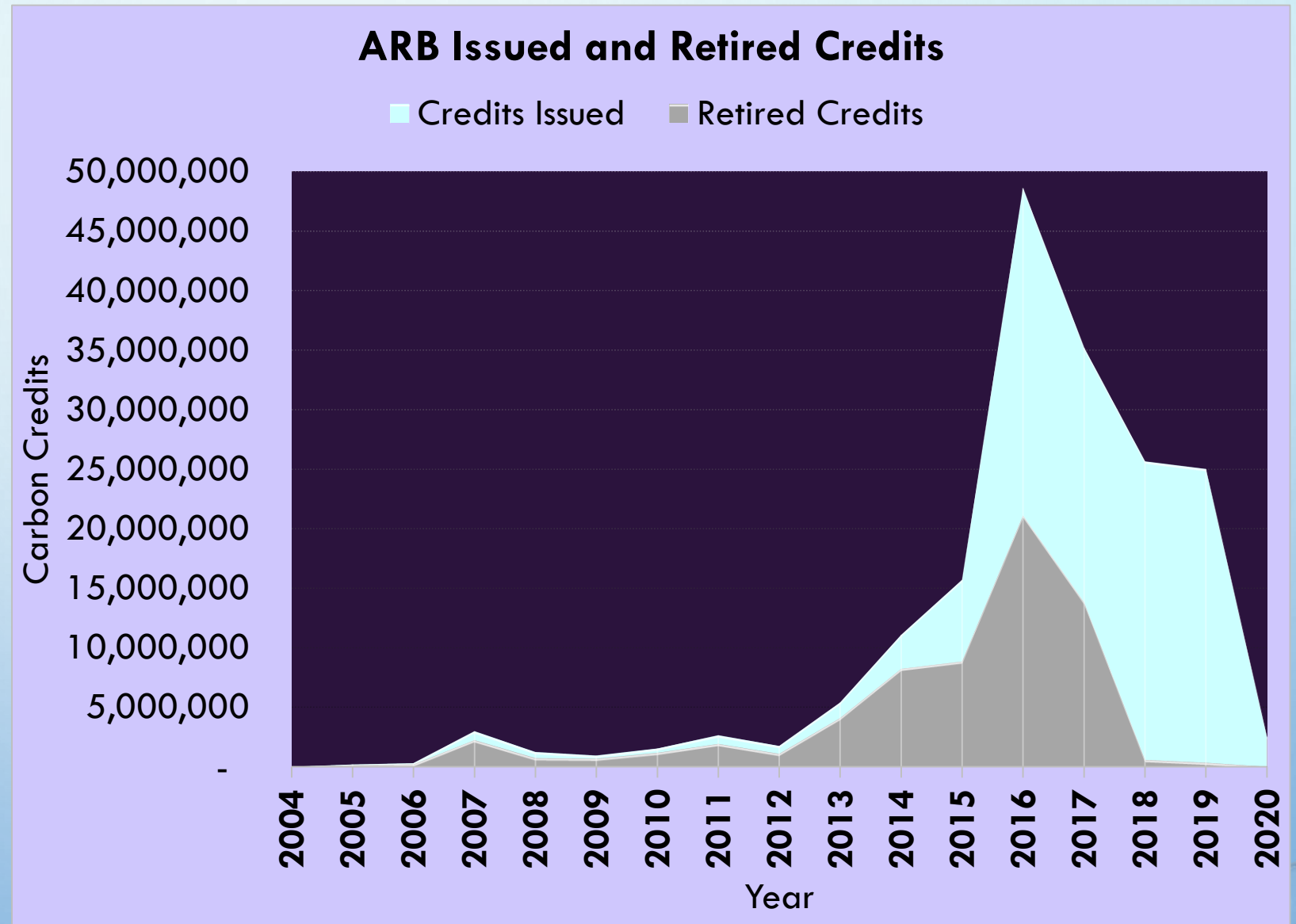


## Acres per State: Over 100,000



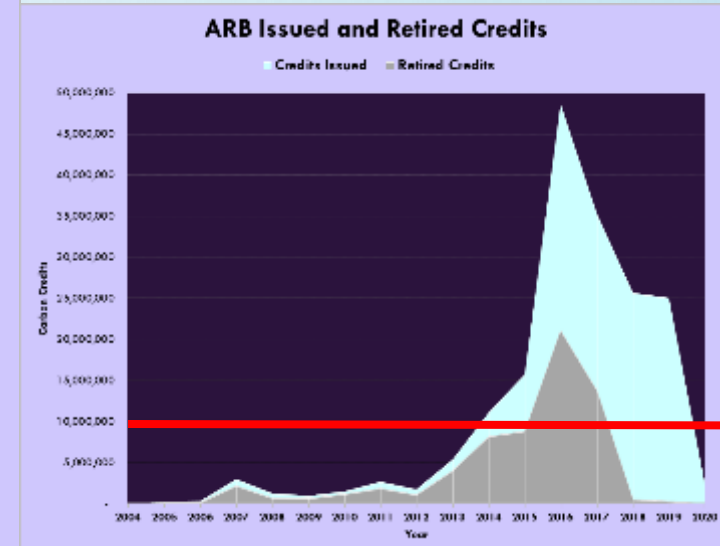
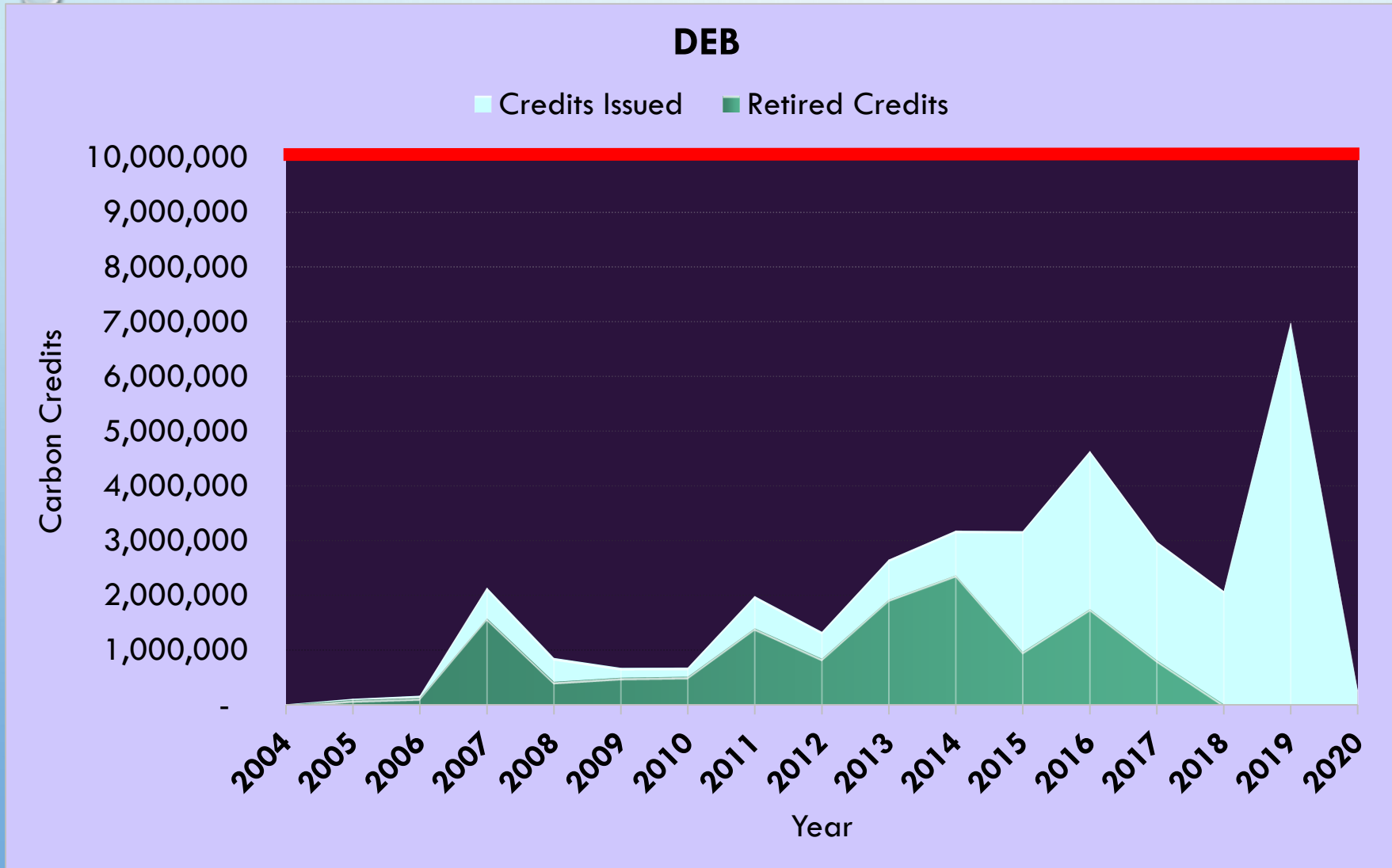


- **ARB**
- **Issued credits:**  
represents one metric ton of CO2 from the atmosphere
- **Retired credits:**  
purchased credits that are taken off the market, so the purchaser can claim to have reduced emissions

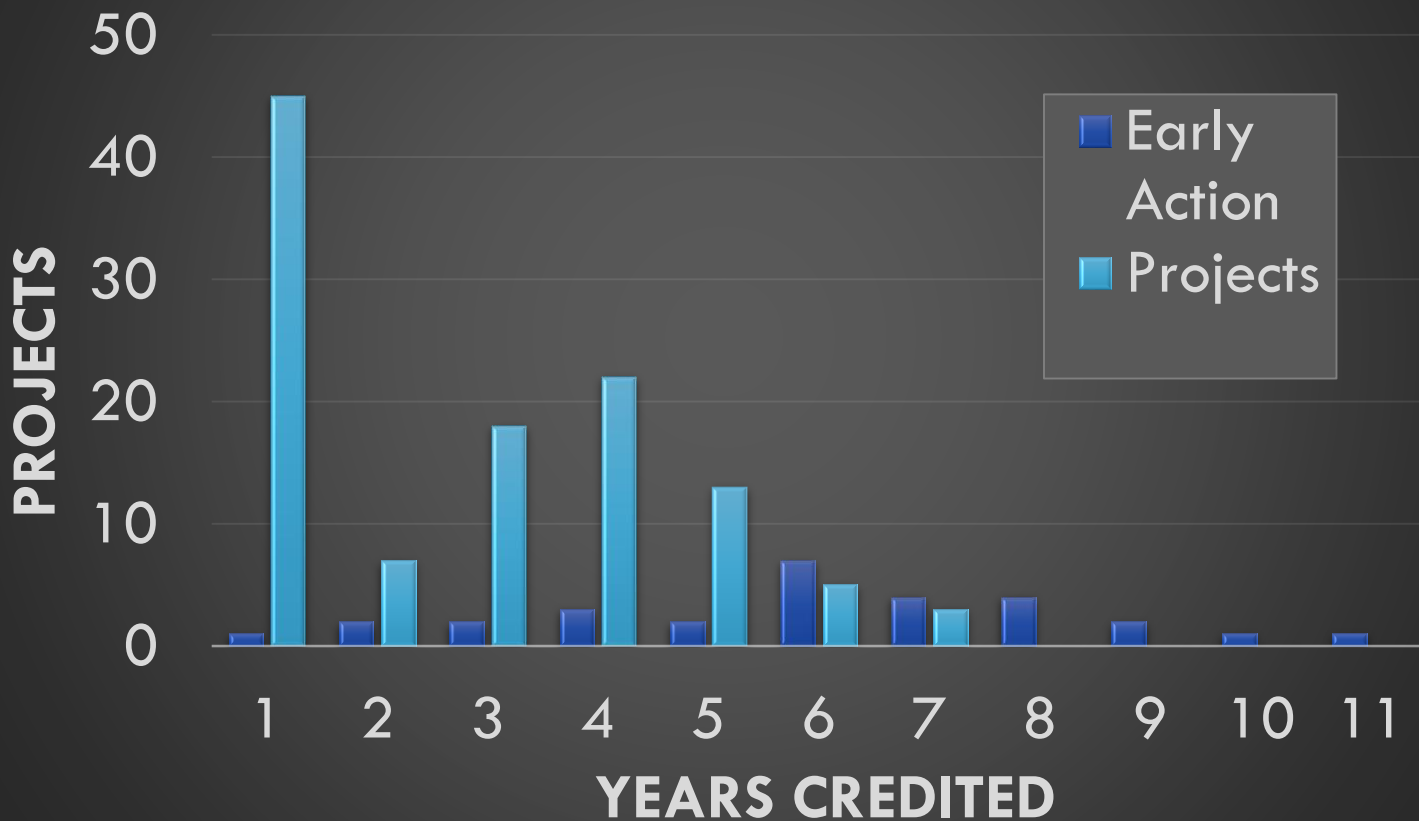


# DEB

## Direct Environmental Benefits In The State Of California



## Length of Forest Projects



ARB

Year	Projects
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2014	3
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2015	4
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2016	7
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2017	10
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2018	7
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2019	12
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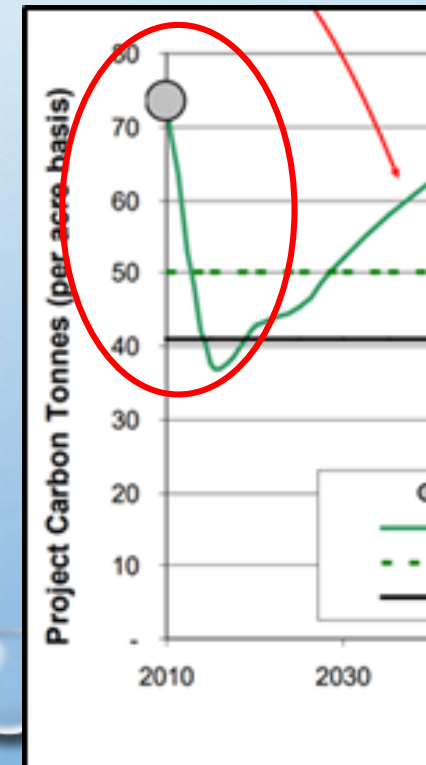
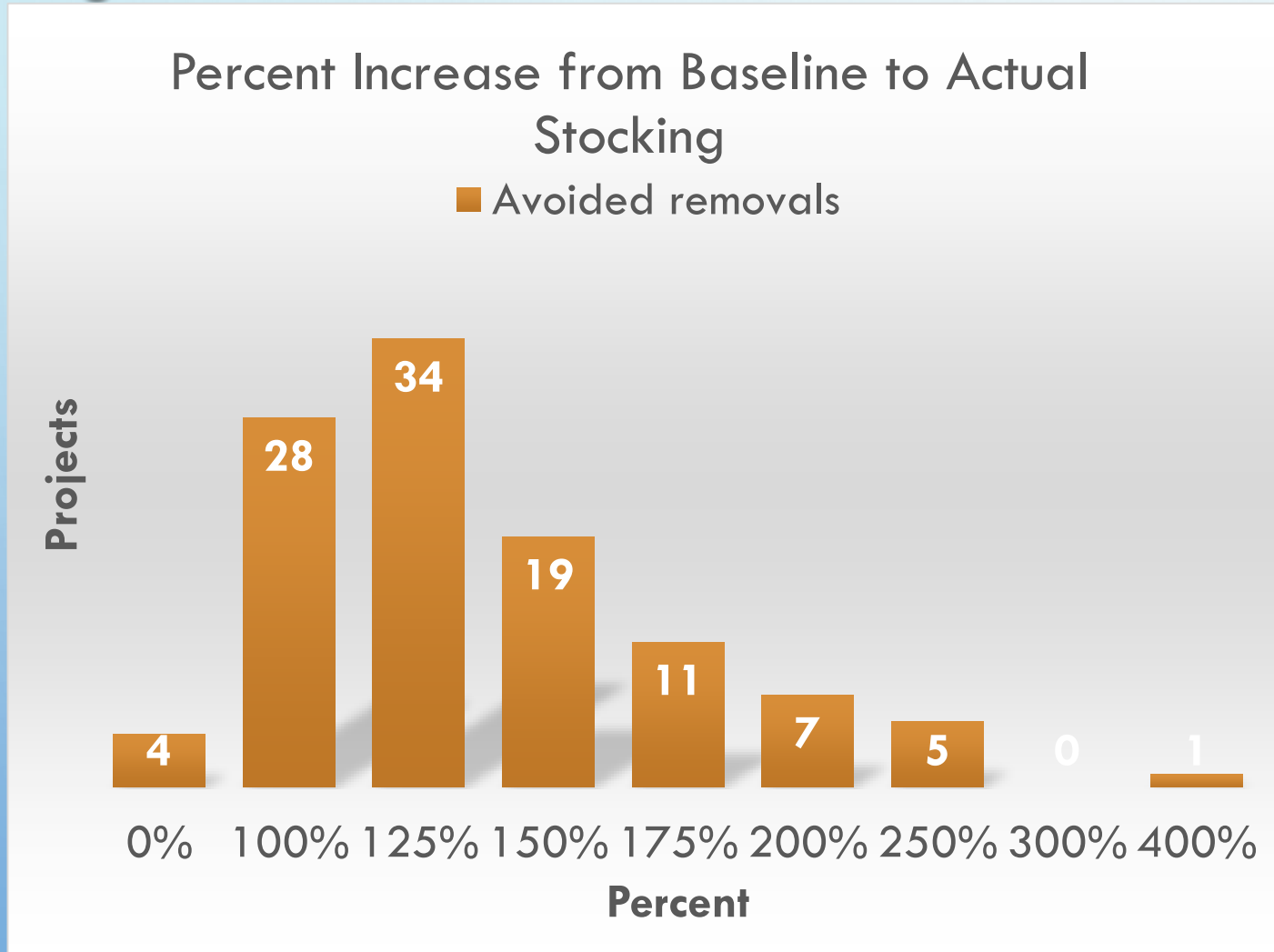
2020	2
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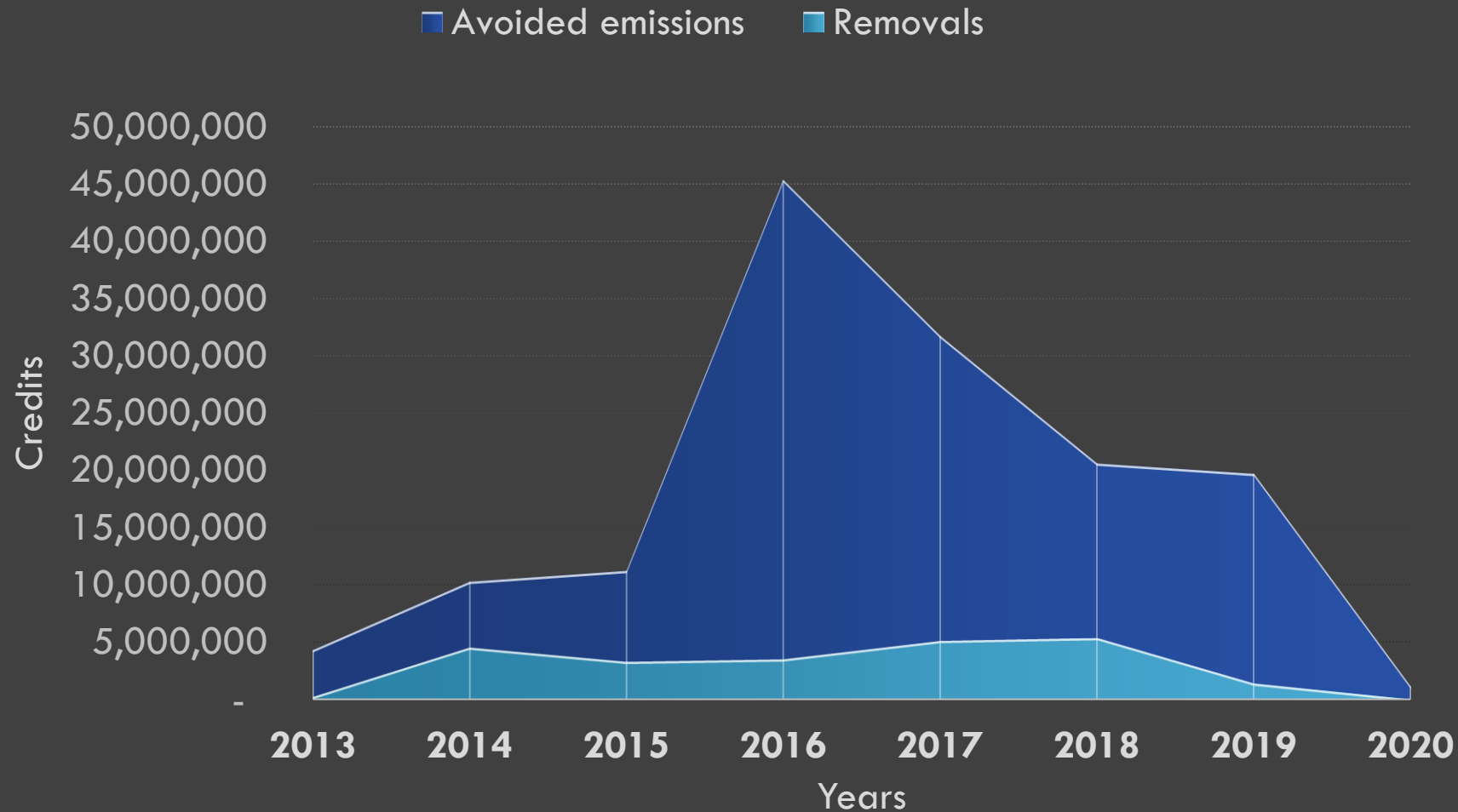
## ARB

**This graph shows the percent increase from the projected stocking to the actual stocking recorded.**

**(not including early action)**



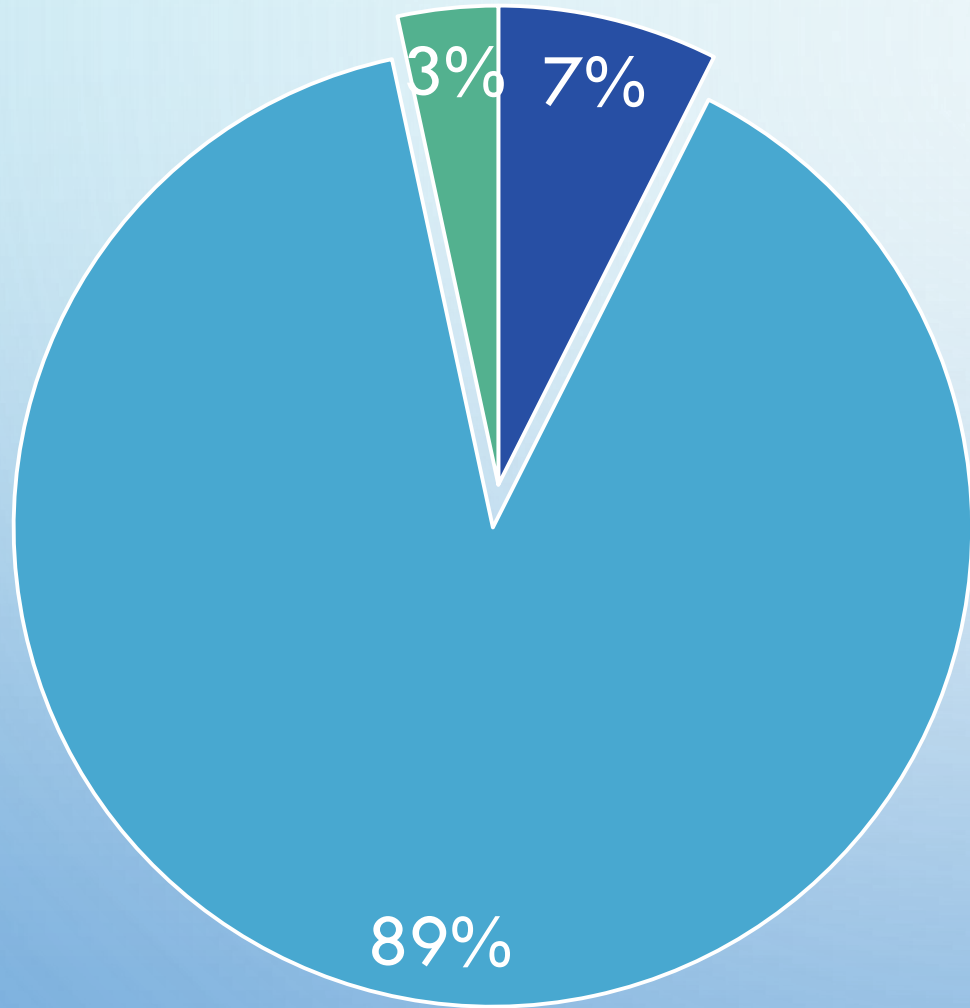
## Avoided Emissions Versus Removals by Credits



**ARB**

**This graph shows the credits per year showing the difference between first year and flux credits.**

# Forest Project Types



■ AC

■ IFM

■ R

## ARB Harvesting

**37.6% All Projects**

56 projects

**38.6% of IFM**

**45% of AC**

**0% of R**



# CONCLUSION

- Carbon offset are new and changing day to day
- We know there is going to be federal and non-federal action in offsets
  - Corporations, States and Regions
- We know there is a demand
- We just touched on a few issues and participation
  - Exploration of data that is out there
  - There is more to come

# BONUS

