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INVEST WITH PURPOSE

Cap & Invest:

Rural Economic Development Opportunities

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The Climate Trust

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Cap and Trade Basics

To emit carbon, you must have a permit. Permits can be:

- **Allowances** – permits issued by the state
- **Offsets** – new emission reductions from unregulated sectors

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Presentation Outline

1. Offset project economic development opportunities
2. Allowance revenue economic development opportunities

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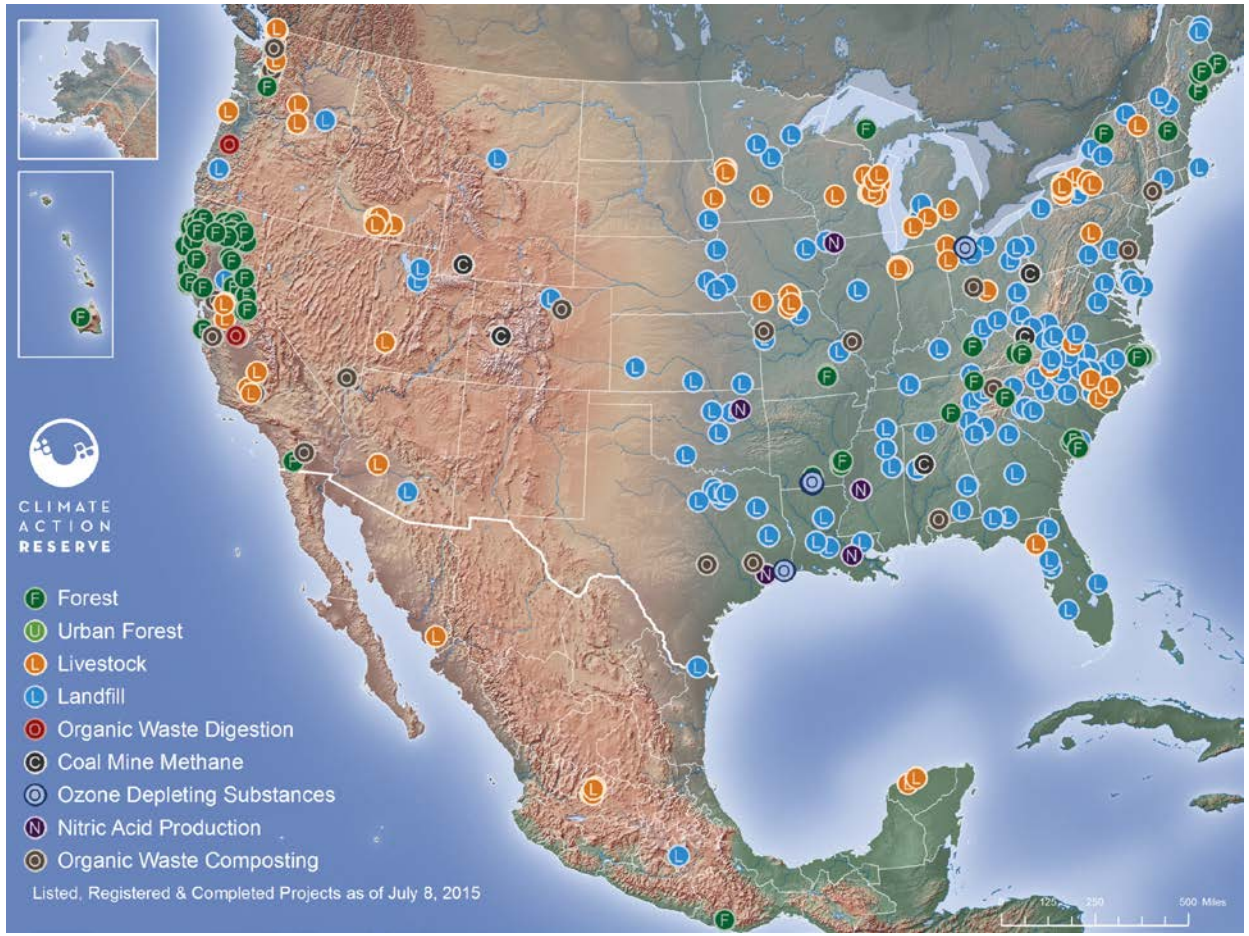
Offset project economic development opportunities

Offset Basics

- In a cap-and-trade systems, sectors that are not covered by the regulation can contribute greenhouse gas reductions.
- Uncapped sectors:
  - Forestry (improved forest management, avoided conversion, reforestation)
  - Agriculture
- Benefits:
  - Economic development opportunity for low-carbon innovations in rural places
  - Cost-containment



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Environmental integrity of offsets

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- Protocol defines
  - what projects ***qualify*** to generate offsets, and
  - how to ***quantify*** the offsets
- Protocol ensures reductions are real, permanent, quantifiable, verifiable, enforceable, and additional
- Annual process to generate cash flows for emission reductions:

The Climate Trust History

- Primary programs
  - **Oregon Program** – Retire offsets on behalf of Oregon utilities
  - **Northwest Natural Smart Energy** – Retire livestock digester offsets from the Pacific Northwest on behalf of NW Natural Customers
  - **Climate Trust Capital** – Invest early-stage, equity-like finance in forestry, anaerobic digester and grassland conservation projects in return for shared ownership of the resulting carbon offsets.

Key Metrics Dashboard

3.3 MILLION
Total tons greenhouse gas reduced

$34 MILLION
Total committed to projects

5.5 MILLION
Contracted emissions reductions (tons)

46
Total projects

$5.5 MILLION
Fund I dollars to deploy

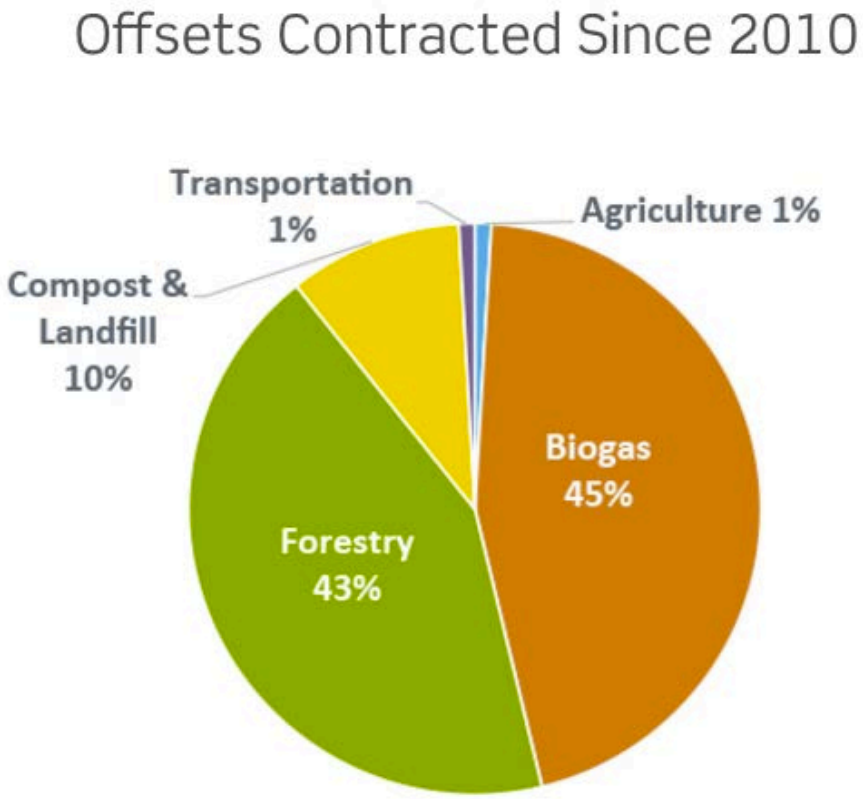
$5.5 MILLION+
Second anticipated deployment

TCT Portfolio

- Biogas
- Agriculture
- Compost & Landfill
- Forestry
- Renewable Energy
- Energy Efficiency
- Transportation
- Material Substitution

The Climate Trust Forestry and Agricultural Work to Date

- Offset projects occur in uncapped sectors → forestry and agricultural projects in rural communities.
- $7.3 million invested in Clatsop, Tillamook, Lane, Morrow and Yamhill Counties
  - Forestry: $2 million
  - Dairy Digesters: $5.3 million



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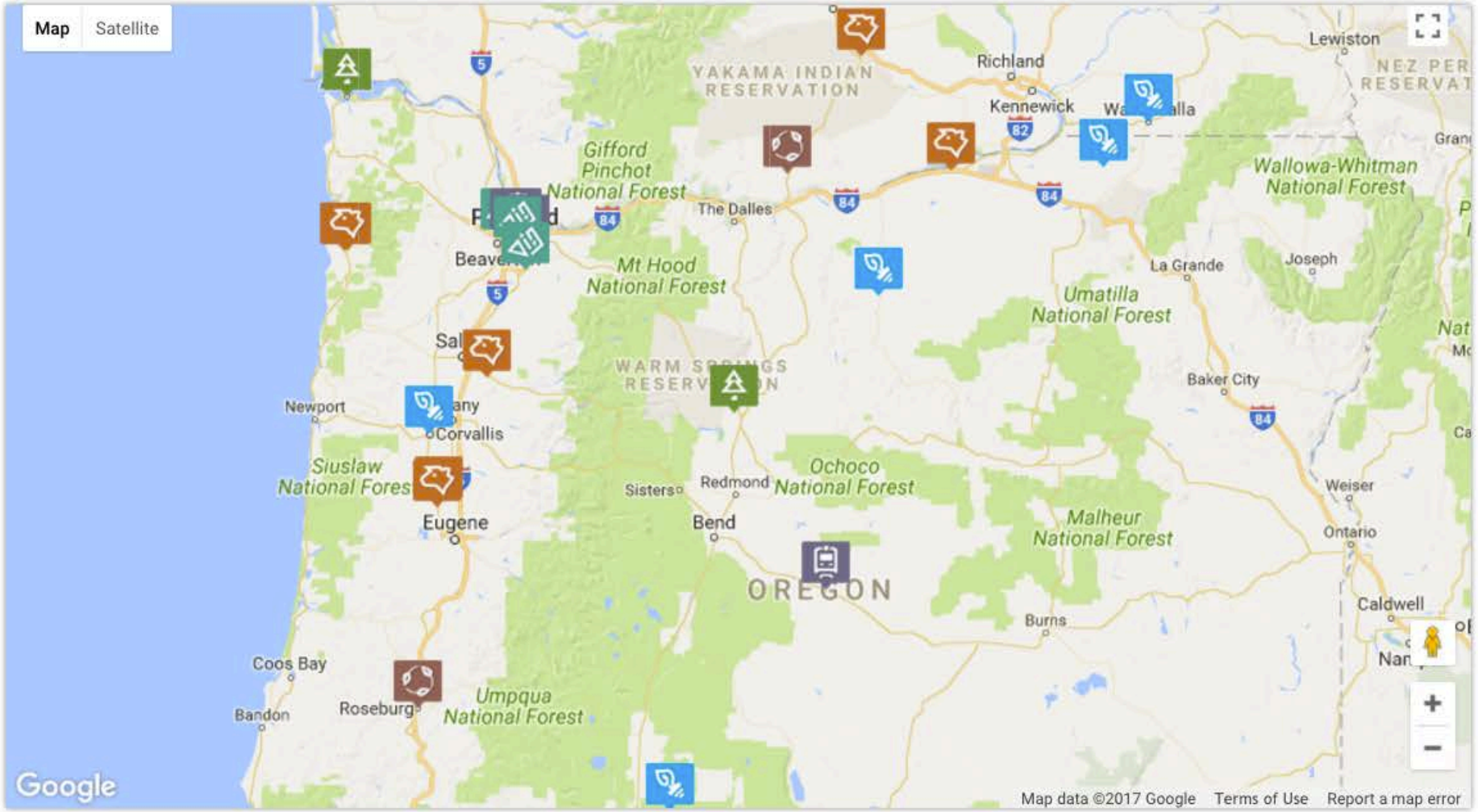
Oregon Portfolio

55% of Oregon Standard funding has been spent on offset projects in Oregon.



- Biogas
- Agriculture
- Compost & Landfill
- Forestry
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Compliance and Voluntary Carbon Market US Supply and Demand

California Air Resource Board Protocols:

1. Livestock digesters
2. Forestry
3. Rice cultivation
4. Ozone depleting substances
5. Coal mine methane capture

Climate Action Reserve Protocols:

1. Grassland conservation
2. Nutrient/nitrogen management
3. Composting

Verified Carbon Standard Protocols:

1. Wetlands
2. Avoided deforestation of tropical forests

American Carbon Registry Protocols:

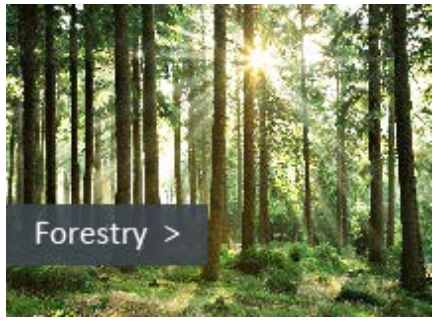
1. Forestry aggregation
2. Livestock management
3. Compost additions to grasslands
4. Wetland restoration

California Compliance Market
$2.18 billion demand through 2025

Voluntary Market
$714 million demand through 2025

Climate Trust Capital

- Provide early-stage, equity-like financing for projects in return for shared ownership of the resulting carbon offsets.
- Closing an investment to aid the purchase of a conservation easement on grazing land in Wallowa County.



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Allowance revenue economic development opportunities

Allowance Revenue Basics

- When emitters pay to pollute, the revenue can accrue to
  1. Emitters (allowances are “allocated” or given away for free)
     - Pro: Protects leakage prone industry.
  2. Citizens (allowances are sold and the revenue is returned to citizens)
     - Pro: Builds citizen support. Potentially combats regressive effects.
  3. Government reinvestment (allowances are sold and the revenue is reinvested in greenhouse gas mitigation)
     - Pro: Lowers long-term costs of meeting climate goals. Prepares Oregon to take part in the growth of the low-carbon economy.

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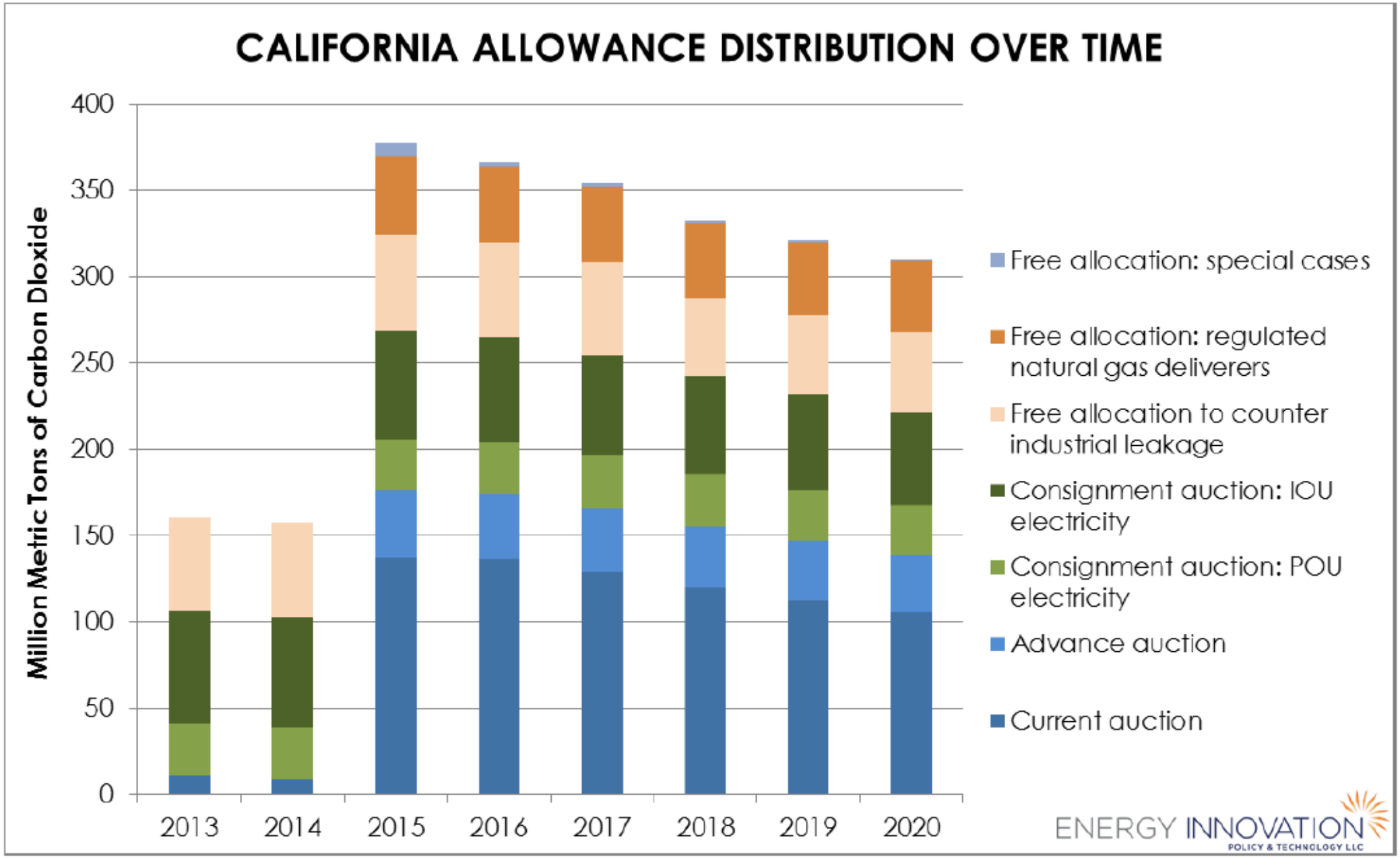
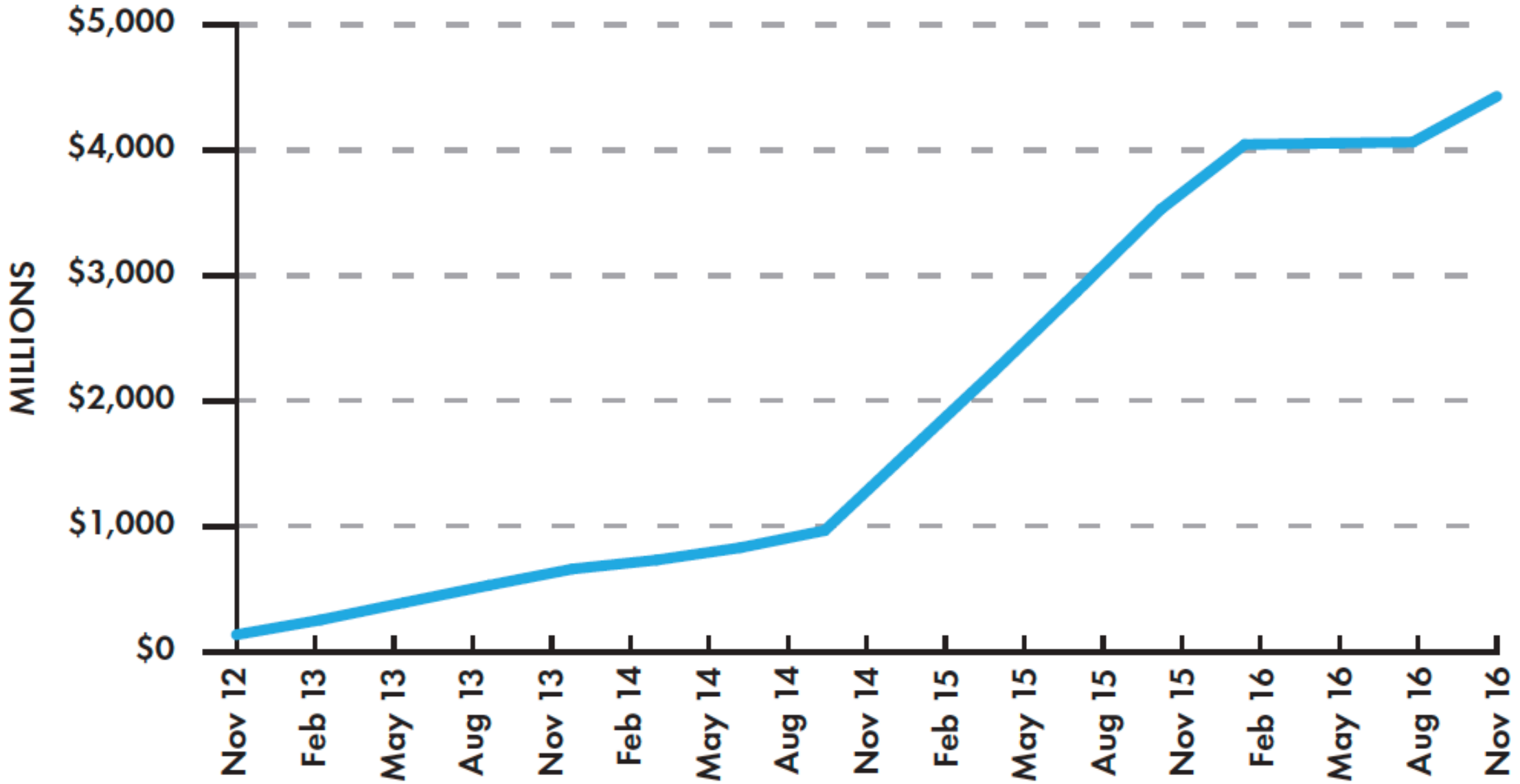


Figure 4. California allowance distribution over time. (Source: Energy Innovation graphic with data from CARB's State Auction Budget Spreadsheet.)[14]

Figure 3: Cumulative Proceeds from the Sale of State-Owned Allowances Deposited in the GGRF (as of December 31, 2016)



Government reinvestment specifics in California

- **California Senate Bill 706** – Auction proceeds must be spent to facilitate the reduction of greenhouse gas emissions in California.
- **California Senate Bill 535** –
  - 10% of the revenues derived from auctioning allowances must be spent directly in disadvantaged communities;
  - 25% of these revenues must be spent in a way that provides benefits to these communities.

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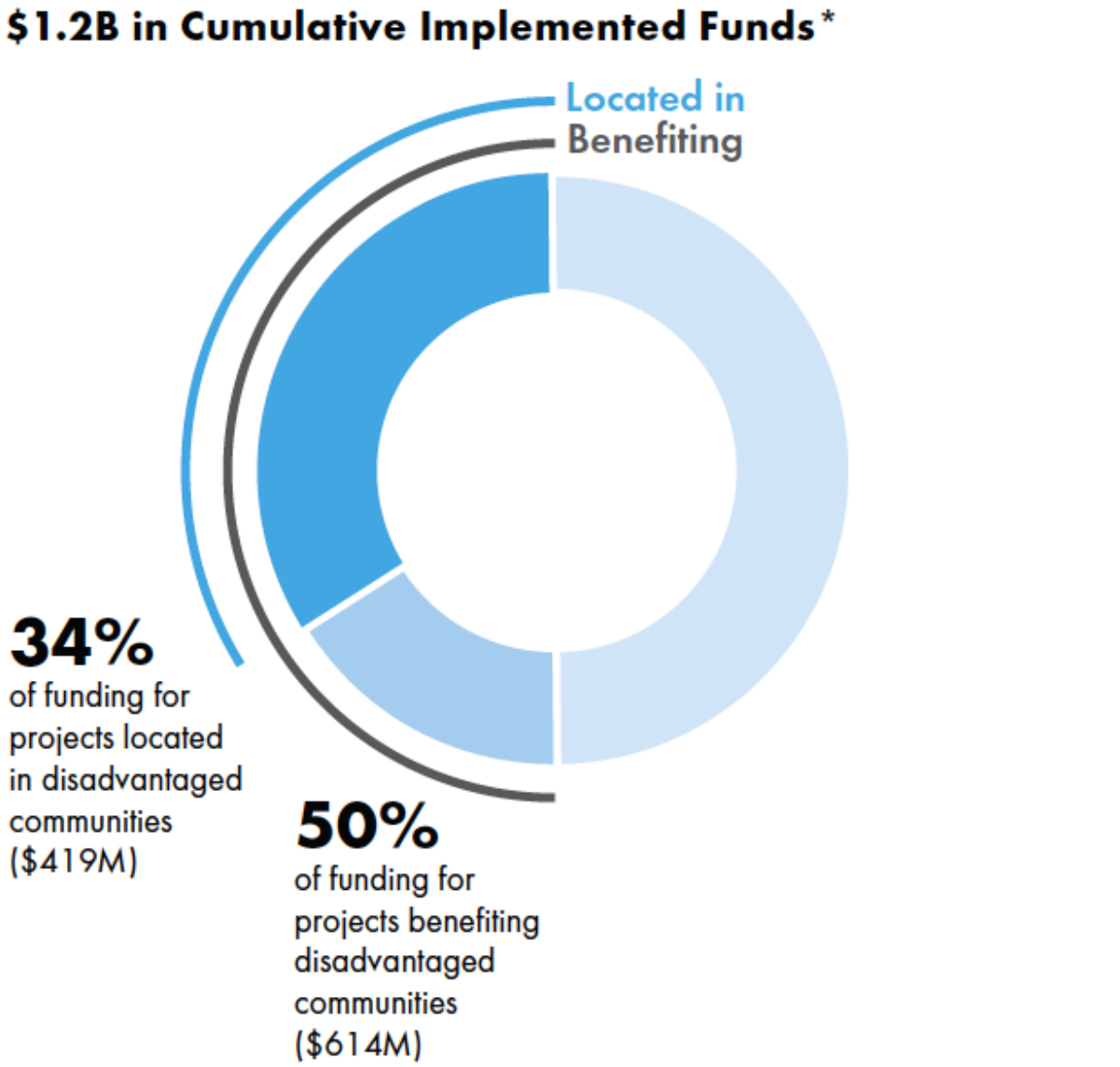
Figure ES-4: Cumulative Investments Benefiting Disadvantaged Communities



Source: California Climate Investments 2017 Annual Report

Potential revenue for low-carbon reinvestment: $3.6 billion per year

- Renew Oregon estimates at least $700 million per year in revenue to reinvest in greenhouse gas mitigation
  - (Key assumptions: prices at California floor, 50% of industry allowances are allocated, remaining allowances are auctioned.)
- Leverage
  - 5.16x leverage from additional public and private capital for each investment from the Greenhouse Gas Reduction Fund (California Climate Investments 2017 Report)
  - $700 million → $3.6 billion per year

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Opportunities for rural investment to develop the low carbon economy

Rural economic development opportunity	Climate benefit
Restoration and forest health treatment	**Carbon sequestration.** Maintain (through avoided fire) and enhance forest carbon storage
Integrated biomass resources	**Carbon dioxide reduction.** Reduce fossil fuel plant emissions
Long-term forest management	**Carbon sequestration.** Increase carbon sequestration
Soil carbon restoration (grassland restoration and management, no-till agriculture)	**Carbon sequestration.** Enhance soil carbon sequestration
Avoided conversion of grasslands into croplands	**Carbon sequestration.** Maintain soil carbon storage
Dairy manure management (solid separation, anaerobic digestion)	**Methane reduction.** Avoid methane emissions
Nutrient management (enhanced nitrogen management through precision agriculture)	**Nitrous oxide reduction.** Reduce nitrous oxide emissions

Land-based climate mitigation opportunities are large job creators.

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INDUSTRY	DIRECT	INDIRECT	INDUCED	TOTAL
Reforestation, Land and Watershed Restoration, and Sustainable Forest Management	17.55	12.95	9.2	**39.7**
Crop Agriculture	9.8	6.5	6.5	**22.8**
Livestock	6.4	9.1	6.2	**21.7**
Gas (heavy and civil construction for pipelines - 50% new and 50% repair)	12.05	3.93	5.912	**21.888**
Mass transit and freight rail construction	13	3.70	5.038	**21.738**
Roads and bridges: repair	11.1	3.69	5.527	**20.317**
Conservation (Parks and Land and Water Conservation Fund)	11.45	4.15	4.7	**20.3**
Water infrastructure	9.96	4.38	5.427	**19.764**
Aviation	9.7	4.30	5.264	**19.266**
School buildings	8.65	5.38	5.233	**19.262**
Building retrofits	7.7	4.70	4.96	**17.36**
Roads and bridges: new	8.7	3.94	4.834	**14.474**
Solar	5.4	4.40	3.92	**13.72**
Biomass	7.4	5.00	4.96	**17.36**
Smart grid	4.3	4.60	3.56	**12.46**
Wind	4.6	4.90	3.8	**13.3**
Electricity generation, transmission, distribution	5.32	4.50	4.696	**14.512**
Coal	1.9	3.00	1.96	**6.86**
Financial Industry	3.22	2.34	1.668	**7.228**
Oil and gas	0.8	2.90	1.48	**5.18**
Nuclear	1.2	1.80	1.2	**4.2**

Source: Heidi Garrett-Peltier and Robert Pollin, University of Massachusetts Political Economy and Research Institute.

Note: Multipliers derived using IMPLAN 2.0 with 2007 data. Infrastructure multipliers and assumptions are presented in "How Infrastructure Investments Support the U.S. Economy: Employment, Productivity and Growth," Political Economy Research Institute, January 2009, http://www.peri.umass.edu/236/hash/efc9f7456a/publication/333/

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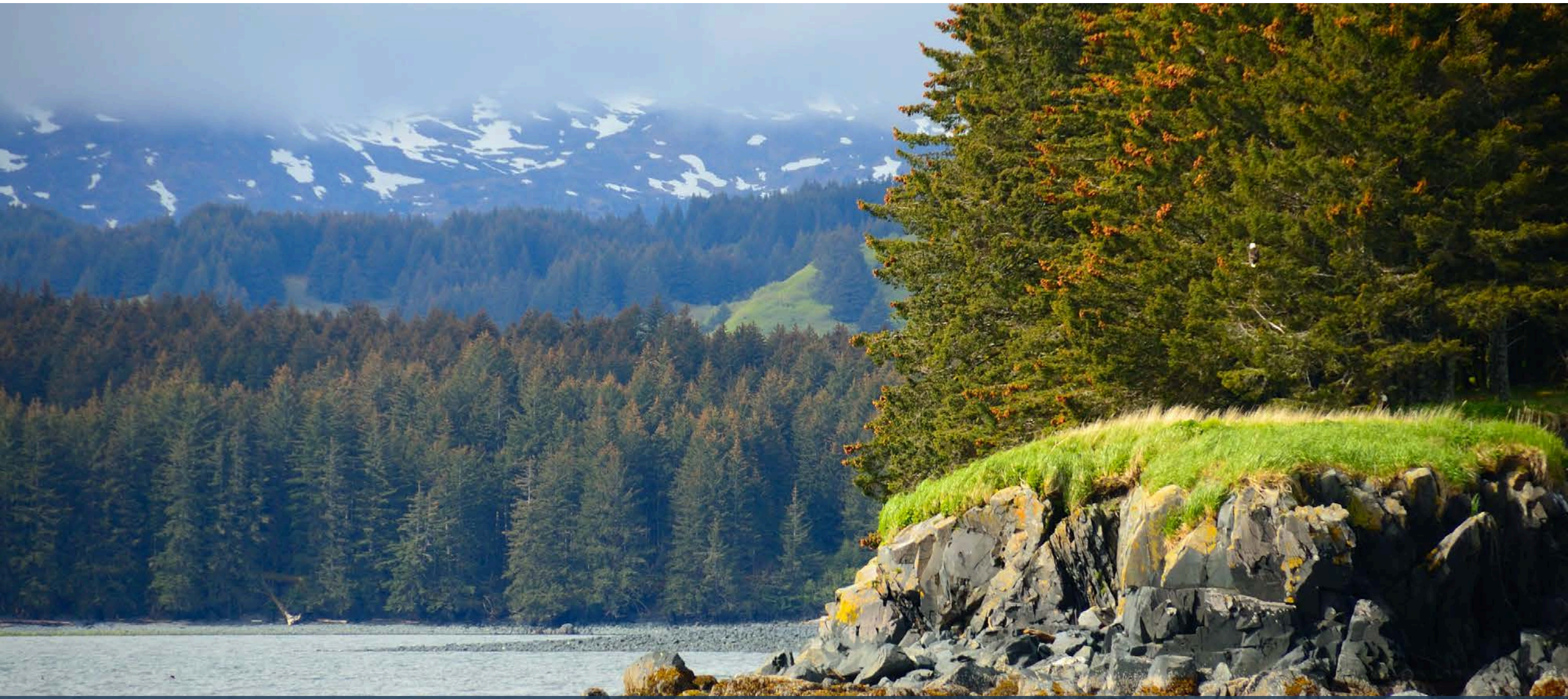

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