

FAA CENTER OF EXCELLENCE FOR ALTERNATIVE JET FUELS & ENVIRONMENT

The Legal & Regulatory Landscape of the Biofuels Industry

Project 01

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Opinions, findings, conclusions and recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of ASCENT sponsor organizations.



Objectives



- **Objective #1.4.1**
 - Analysis of law/policy frameworks/drivers for biofuels & ecosystem services
 - Geographic scope: nationwide, three sub-regions (Hawaii, the Pacific Northwest and the Southeast)
- **Objective #1.4.3**
 - Support stakeholder engagement efforts
 - Facilitate effective dialogue to help bridge the gap between producers, industry, government, and other affected stakeholders.

Schedule and Status



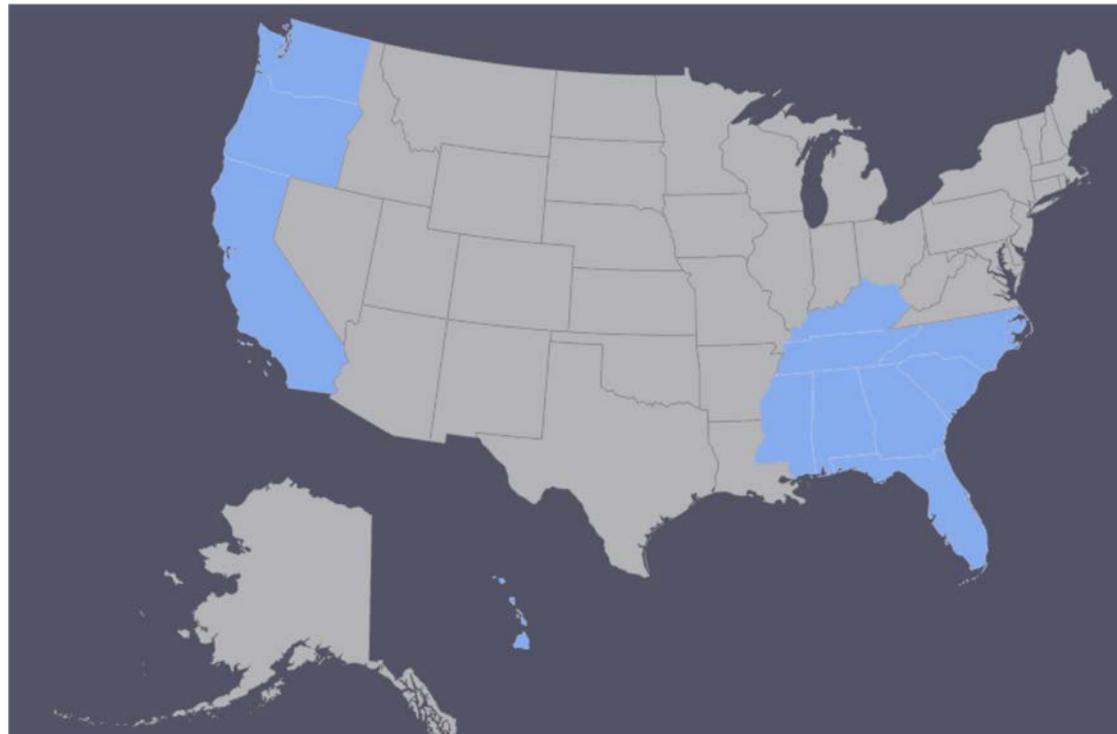
- **2017-2018**
 - Draft white papers outlining the biofuel law and policy landscapes and industry drivers in Hawaii, the Pacific Northwest, and the Southeast, with an overview of national policy drivers (Objective 1.4.1)
 - Papers are under review
 - Present a Facilitation 101 meeting to the regional partners on the ASCENT Project 1 team (Objective 1.4.3)
 - Presentation made on 4/30/18

- **2018-2019**
 - Publish national and regional law & policy white papers (Objective 1.4.1)
 - Work with ASCENT team members to identify regional stakeholders and conduct stakeholder engagement sessions, as needed (Objective 1.4.3)
 - Discussions in progress with regional teams to identify opportunities to facilitate stakeholder engagement

Approach

National + 3 Regions of Focus:

- Hawaii
- Pacific Northwest
- Southeast



Questions to be answered:

- What is the general landscape of the energy portfolio and biomass industry in the region?
- What laws or regulations in each region impact the biofuels industry?
- What biofuels and ecosystem services incentive programs currently exist in the region, if any?
- Has the state or region defined ecosystem services, and if so, how?
- Are there opportunities to incentivize markets for ecosystem services?
- What are the best practices in each region and what are the stumbling blocks?

For Regions of Focus

- **National Overview**
- Hawaii
- Pacific Northwest
- Southeast



There are both supply and demand drivers for 2nd generation biofuel



SUPPLY

ENERGY

- Bioenergy
Technology Office:
R&D Development
Partnerships

DEMAND

AGRICULTURE

- Ag. Risk Protect. Act of 2000
- Farm Security and Rural Investment Act of 2002
- Energy Policy Act of 2005
- Farm Bills

TRANSPORTATION

- Alt. Transp. Fuel Programs
- Clean Cities Program

B
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AVIATION

- Federal Aviation Admin
- Coordinated Gov Effort

FORESTRY/TIMBER

- US Forest Service research and development projects
- Biofuels R&D Enhancement Act

MILITARY

- Defense Production Act Tit. III
- Energy, Ag., and Navy MOU

National Biofuel Law & Policy Drivers



From 1978 to 2004, law and policy promoted “First Generation” Biofuels

- First Generation Biofuels
 - Sourced from primarily food based feedstock:
 - sugars, grains, starches
 - To produce: ethanol, biodiesel
- Examples of law and policy supports ...
 - 1973 Energy Crisis → 1978 National Renewable Energy Act
 - 1980 Energy Security Act targeted new sources of renewable energy, provided tax exemptions and insured loans, increased an earlier fuel blend credit from \$.40 to \$.60 / gallon.
 - 1990 Omnibus Budget Reconciliation Act: shift from goal of industry from energy security to regional economic development.

National Biofuel Law & Policy Drivers



Since 2005, the law and policy has been focused on promoting “2nd and 3rd Gen” Biofuels

- Second & Third Generation
 - Non-food based feedstock: grasses, non-federal forest biomass, waste/residues, algae
 - Products: ethanol, biodiesel, drop in biofuels, biojet
- Example of law and policy
 - 2005 Energy Policy Act (“RFS1”) aimed to spark growth of biofuel industry and address number of challenges
 - RFS1 “promotes dependable, affordable, and environmentally sound production and distribution of energy for America’s future.” (George W. Bush)
 - 2007 Energy Independence & Security Act (EISA) expanded RFS1, known as RFS2
 - Mandated “obligated parties” to blend certain percentages of biofuels into the U.S. transportation fuel supply

National Biofuel Law & Policy Drivers



Renewable Fuel Standard 2014-2018

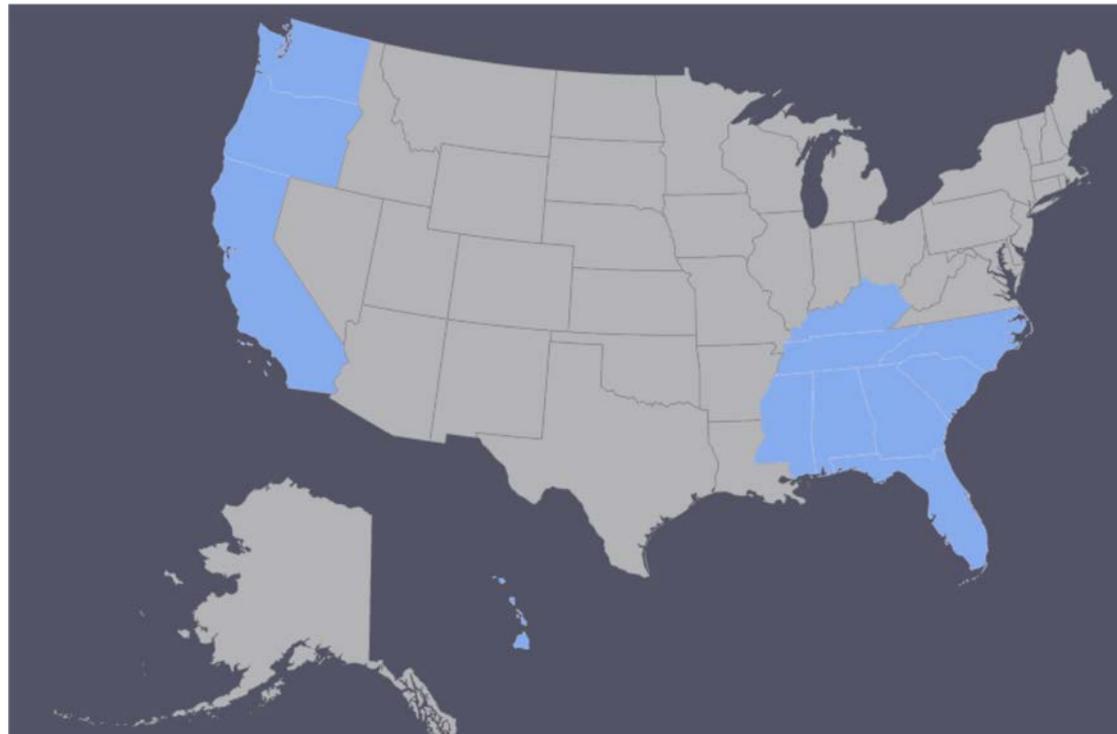
Renewable Fuel Volume Requirements for 2014-2018

	2014	2015	2016	2017	2018
Cellulosic biofuel (million gallons)	33	123	230	311	288
Biomass-based diesel (billion gallons)	1.63	1.73	1.9	2.0	2.1
Advanced biofuel (billion gallons)	2.67	2.88	3.61	4.28	4.29
Renewable fuel (billion gallons)	16.28	16.93	18.11	19.28	19.29

(<https://www.epa.gov/renewable-fuel-standard-program/final-renewable-fuel-standards-2017-and-biomass-based-diesel-volume>)

Regions of Focus

- National
- **Hawaii**
- Pacific Northwest
- Southeast



Hawaiian Biofuel Law & Policy Drivers



- 90%+ of all energy consumed imported from foreign sources
- Challenges:
 - Electricity security & independence
 - Price volatility
 - Agricultural production impacts
 - Environmental impacts
 - Trade concerns

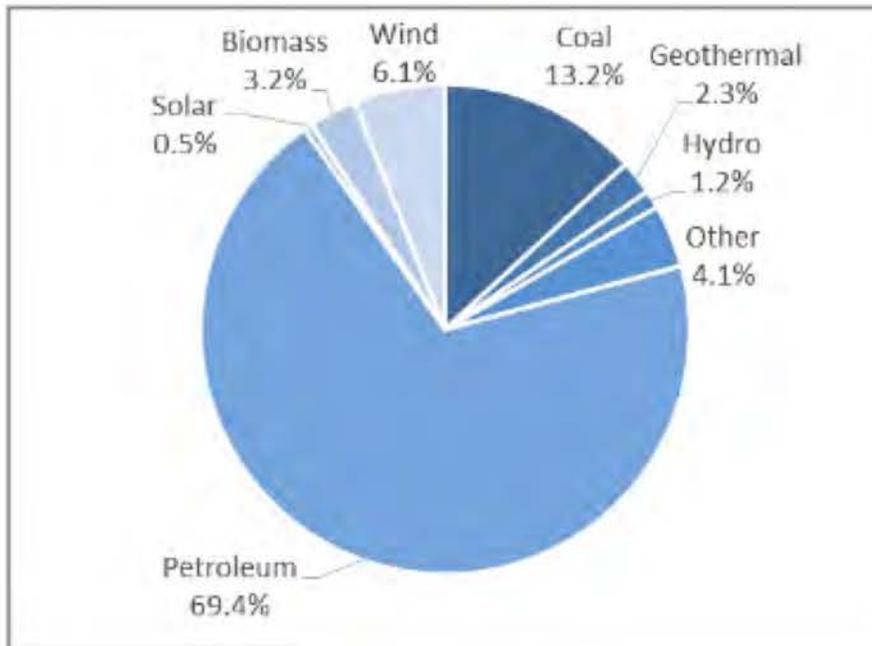
(https://energy.hawaii.gov/wp-content/uploads/2011/10/HSEOFactsFigures_May2017_2.pdf)

Hawaiian Biofuel Law & Policy Drivers

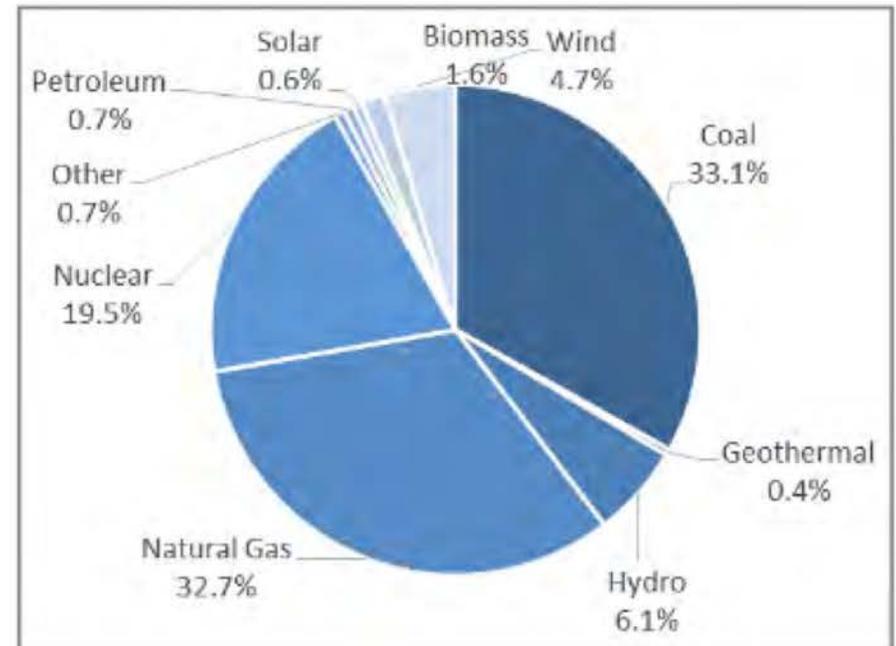


- In Hawaii, 69.4% of the state's energy is generated from oil, while 13.2% comes from coal
- Across the US, <1% of electricity is generated using oil

Hawaii Electricity Production by Source (2015)



U.S. Electricity Production by Source (2015)

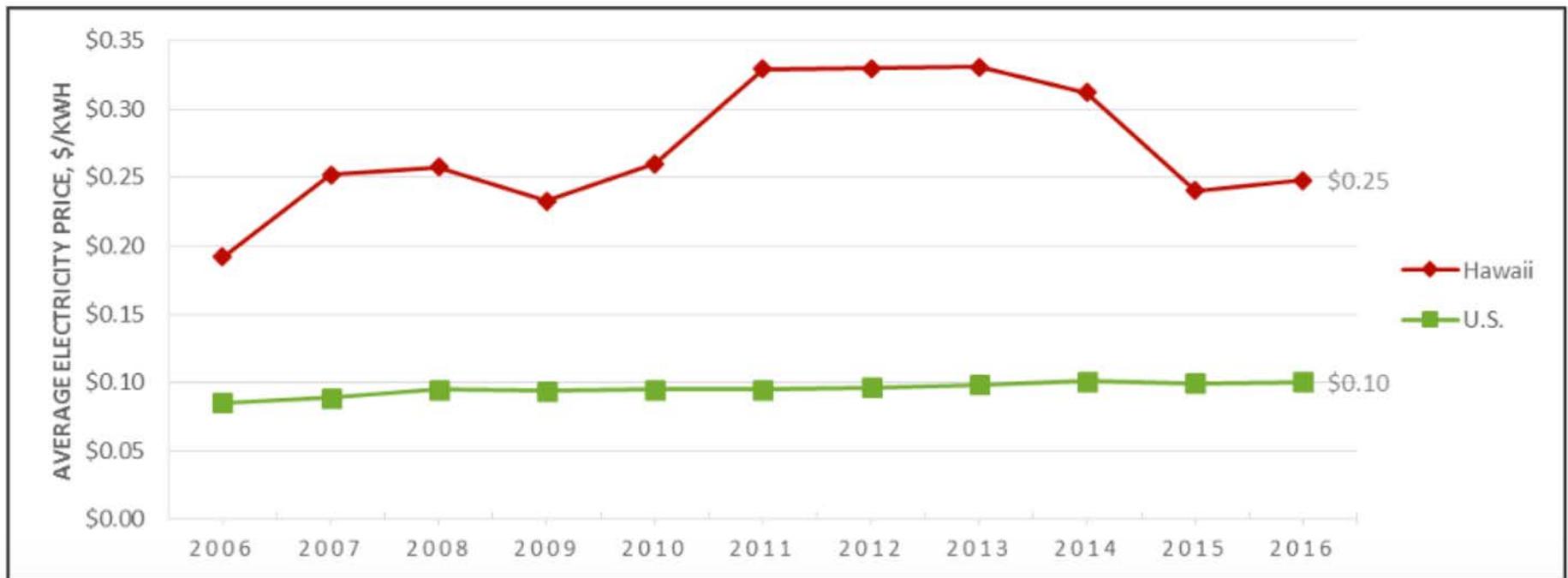


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Hawaiian Biofuel Law & Policy Drivers



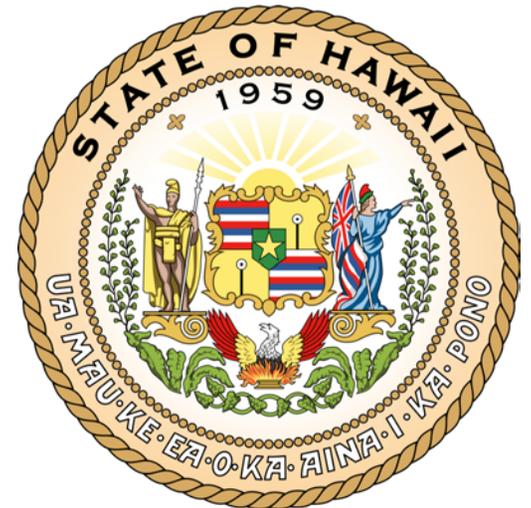
- Dependence on fossil fuels for electricity generation causes Hawaii's electric prices to be more than double the national average



(https://energy.hawaii.gov/wp-content/uploads/2011/10/HSEOFactsFigures_May2017_2.pdf)

- **Hawaii Renewable Portfolio Standard (RPS)**

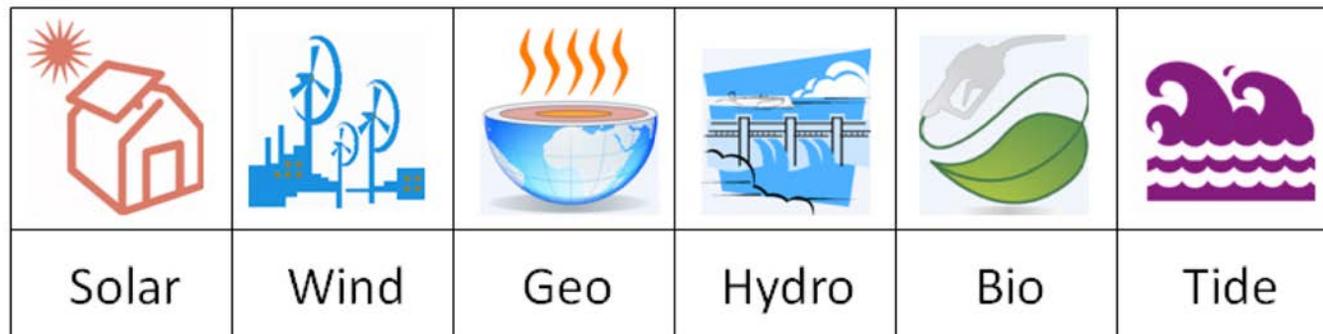
- Enacted in 2015
- Requires each electricity utility company to establish a RPS of:
 - 20% of its sales by 2020
 - 40% of its sales by 2030
 - 70% of its sales by 2040
 - 100% of its sales by 2045
- “Electrical energy savings” **do not** count towards the RPS goals
- The entire RPS for each utility must be met by electrical generation from renewable energy sources



Hawaiian Biofuel Law & Policy Drivers



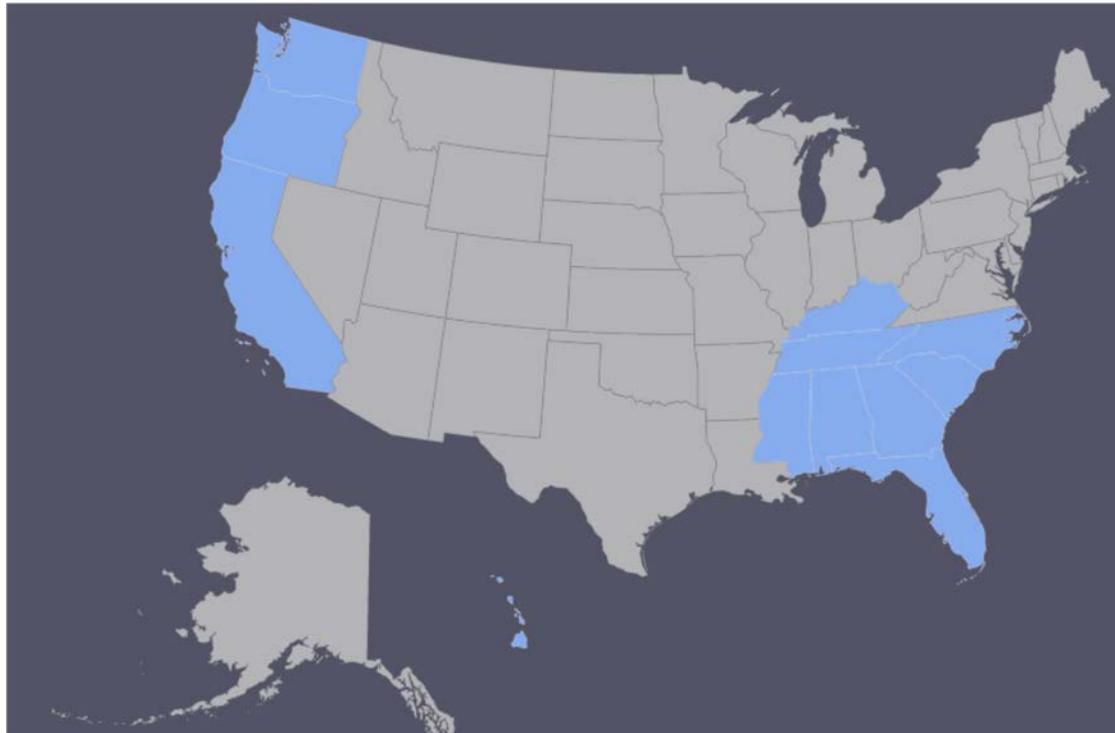
- **Hawaii Renewable Portfolio Standard (RPS, con't.**
 - Hawaiian state law defines “renewable energy” to mean energy generated or produced from:
 - Wind
 - Solar
 - Falling Water & Ocean Tides
 - Geothermal Sources
 - **Biomass (including municipal solid waste)**
 - **Biofuels**
 - Hydrogen from renewable sources
 - Biogas



(<https://www.e-education.psu.edu/eme807/node/649>)

Regions of Focus

- National
- Hawaii
- **Pacific Northwest**
- Southeast



Pacific Northwest Biofuel Law & Policy Drivers



- **Western Climate Initiative**

- Original agreement signed in February 2007
 - States involved:
 - Arizona
 - California
 - New Mexico
 - Oregon
 - Washington
- 2007-2008: Additional Jurisdictions Joined
 - British Columbia, Manitoba, Ontario and Quebec
 - Montana, Utah
- Parties agreed to identify, study, and implement ways to reduce greenhouse gas emissions
- **Main reduction goal:** “the reduction of regional greenhouse gas emissions by 15% below 2005 levels by 2020”



Pacific Northwest Biofuel Law & Policy Drivers



Manitoba

GDP 49 Billion C\$
 Population..... 1,186,700
 Largest Source of Emission .. Transportation

Ontario

GDP 582 Billion C\$
 Population..... 12,803,900
 Largest Source of Emission ... Transportation

British Columbia

GDP 190 Billion C\$
 Population..... 4,380,300
 Largest Source of Emission .. Transportation

Quebec

GDP 298 Billion C\$
 Population..... 7,700,800
 Largest Source of Emission ... Transportation

Washington

GDP 311 Billion US\$
 Population..... 6,468,424
 Largest Source of Emission .. Transportation

Oregon

GDP 158 Billion US\$
 Population..... 3,747,455
 Largest Source of Emission .. Transportation

Montana

GDP 34 Billion US\$
 Population..... 957,861
 Largest Source of Emission ... Electricity

California

GDP 1,813 Billion US\$
 Population..... 36,553,215
 Largest Source of Emission .. Transportation

Utah

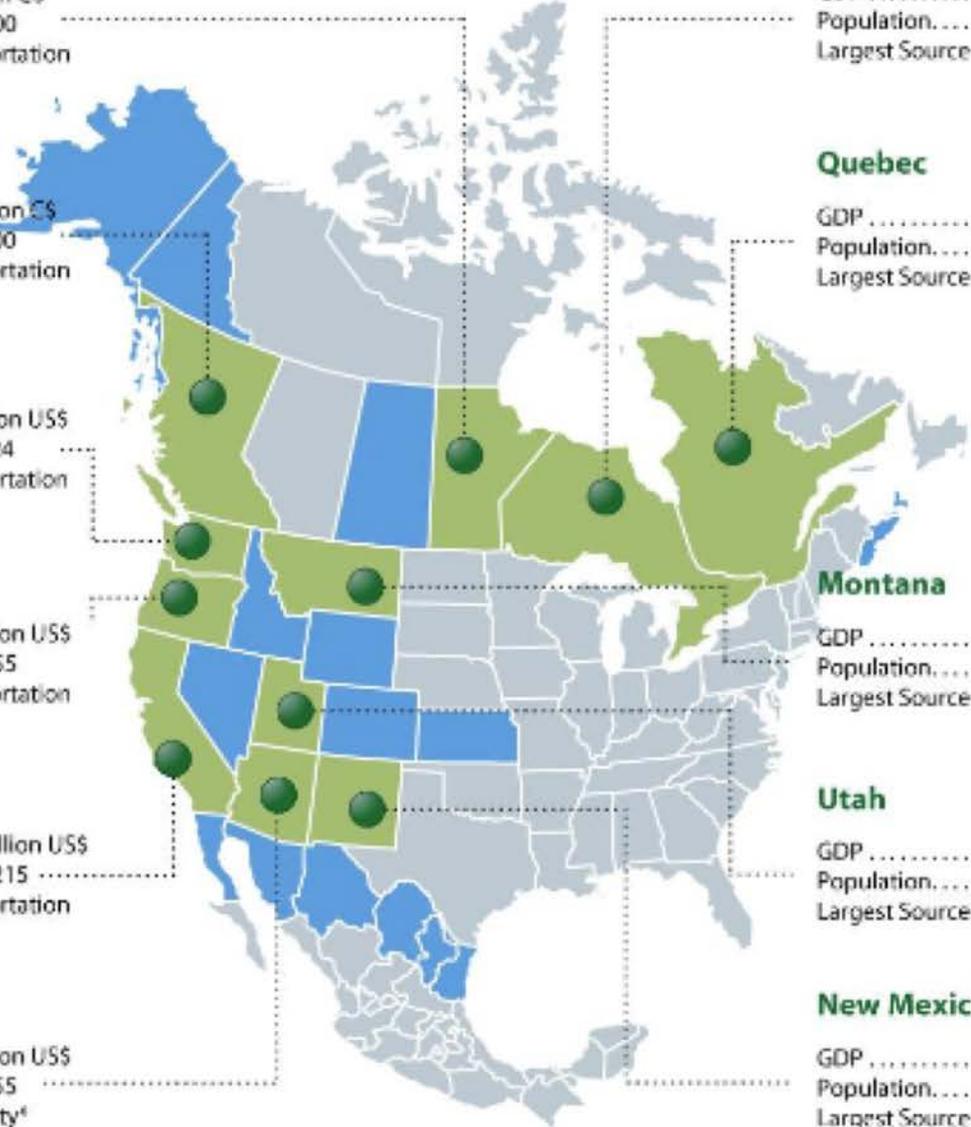
GDP 106 Billion US\$
 Population..... 2,645,330
 Largest Source of Emission ... Electricity

Arizona

GDP 247 Billion US\$
 Population..... 6,338,755
 Largest Source of Emission .. Electricity⁴

New Mexico

GDP 76 Billion US\$
 Population..... 1,969,915
 Largest Source of Emission ... Electricity



⁴ Includes Tribal lands

Partners Observers

Pacific Northwest Biofuel Law & Policy Drivers



- **Western Climate Initiative, con't.**

- Uses a cap-and-trade program to target emissions reductions
- WCI cap-and-trade program excludes carbon dioxide emissions from the combustion of biomass, biofuel, pure biofuels, or the proportion of carbon dioxide emissions from the combustion of biofuel in a blended fuel
 - Requires that biofuel or biomass source determined by a WCI partner to be carbon neutral
 - Indirectly promotes the consumption of renewable fuels
 - Supports the Federal Renewable Fuels Standard program by promoting biofuel production & consumption



Pacific Northwest Biofuel Law & Policy Drivers



• Renewable Fuel Standards

– Washington:

- Requires 2% of all diesel sold in WA to be biodiesel or renewable diesel
- Will increase to 5% 180 days after WA State Department of Agriculture determines that in-state feedstocks and oil-seed crushing capacity can meet a 3% requirement
- At least 2% of total gasoline sales in the state must be denatured ethanol



– Oregon

- 10% ethanol in gasoline and 5% biodiesel in diesel fuels



Pacific Northwest Biofuel Law & Policy Drivers



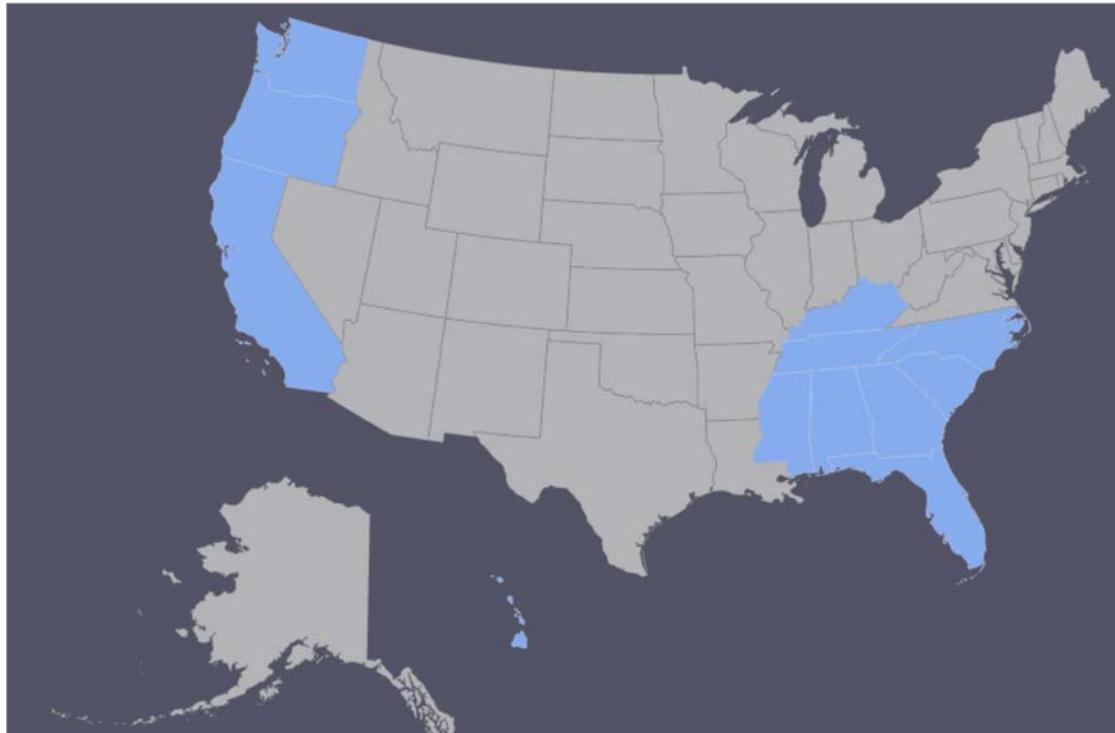
- **California Low Carbon Fuel Standard (LCFS)**

- Calls for a reduction of at least 10% in the carbon intensity of CA's transportation fuels by 2020
- Requires petroleum importers, refiners, and wholesalers to produce low-carbon fuel products or buy LCFS credits
- Promotes biofuel industry because ethanol and non-ethanol renewable fuels generate credits, which can be bought, sold and banked by petroleum companies to meet LCFS requirements



Regions of Focus

- National
- Hawaii
- Pacific Northwest
- **Southeast**

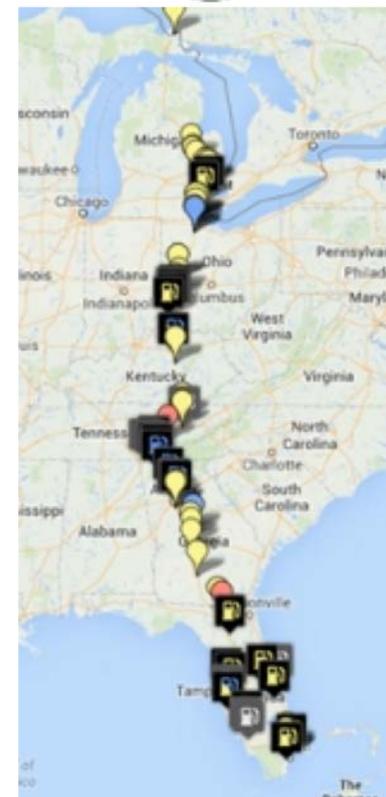


Southeast Biofuel Law & Policy Drivers



- **Biofuel Green Island Corridor Network**

- Aimed to create a network of biofuel pumps at existing retail fuel stations
- By 2014: Green Corridor project installed biofuel pumps along the entire 1,786-mile length of I-75 (from Florida to Michigan)
 - Program goal: Provide either E85 ethanol or B20 biodiesel pumps at least every 100 miles along the corridor and throughout the state(s)
 - Established 34 biofuel pump sites along I-75
- Tennessee offers Green Island Corridor (GIC) grants to help establish these biofuel pumps



Southeastern Biofuel Law & Policy Drivers



- **Tennessee Biofuels Incentive Statute**
(TN Code § 54-1-136)
 - Grants the Department of Transportation the authority to make public-private partnerships with transportation fuel providers (including farmer co-ops) to install biofuel dispensing infrastructure (storage tanks and fuel tanks)
 - Funding comes in the form of a grant program, to be established by the DOT



Southeastern Biofuel Law & Policy Drivers



- **Tennessee Biofuel Blending Contract Regulation**
 - Any contract provision between a fuel wholesaler and a refiner or supplier that limits or restricts a wholesaler's ability to blend petroleum products with biodiesel is null and void



- **Georgia Fuel Alcohol Blending Regulation**
 - Gasoline suppliers who provide fuel to distributors in the state must offer gasoline that is suitable for blending with fuel alcohol



Global capital markets are looking to invest in sustainability practices



SIWI WORLD WATER WEEK PROGRAMME

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Exhibitors

Tags ▾

Days ▾

Stockholm International Water Institute / African Development Bank / Inter-American Development Bank / The Nature Conservancy

Is there such thing as innovative financing for ecosystems management?

Tuesday 28 August | 11.00-12.30 | Room: FH 300



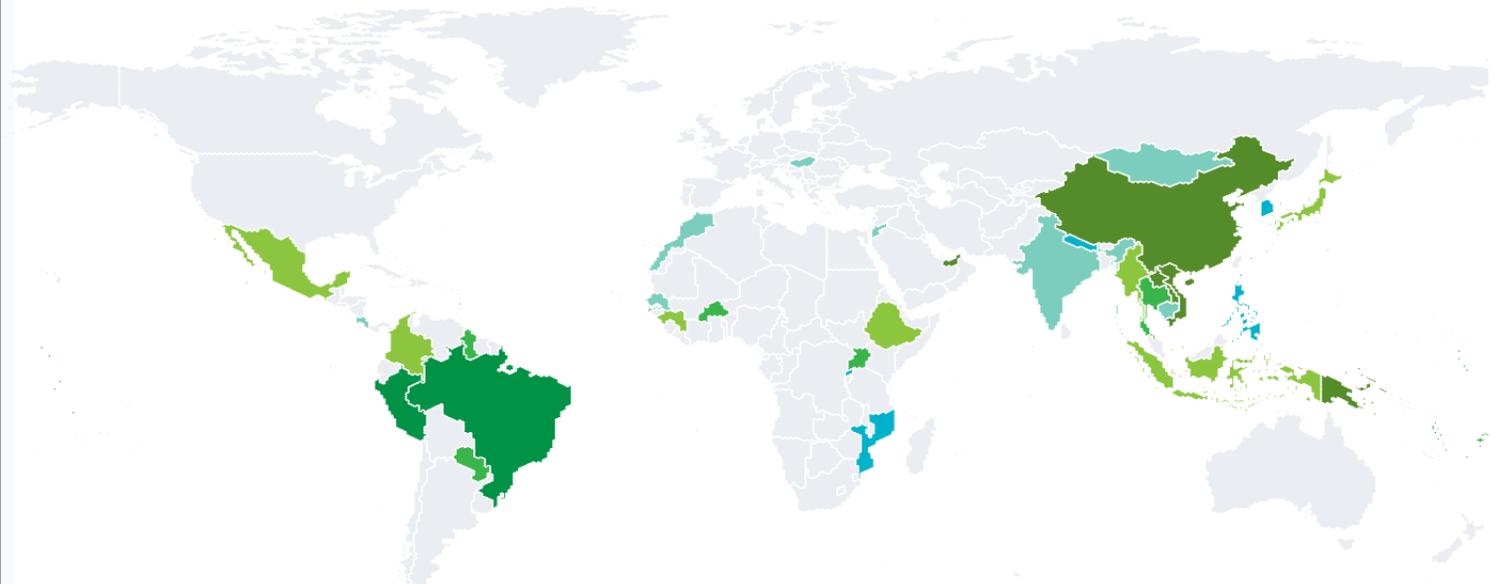
How We Work

Country Programs ▾

Global Programs ▾

Thematic Strategies ▾

Projects



Susanna

Projects are being piloted in N. America



Latest News

- > Yuba Water Agency dams deemed safe in recent state assessment
- > The Faces of Yuba Water - Hydrographers
- > Yuba Water Agency to purchase 20-acre property in Dobbins
- > Over \$110,000 in funding approved for local agencies

Pilot project to study impacts of forest management on Yuba watershed

A healthier, thinner forest reduces fire risk significantly, and it also protects water quality and improves water quantity. The Yuba watershed is about to reap all of those benefits, through a pilot project of the Forest Resilience Bond with Blue Forest Conservation and the World Resources Institute. The Yuba County Water agency will support this effort with a \$1.5 million cost-share contribution to fund the planned restoration in the Yuba Project.

The agency's board of directors today approved the cost-share contribution, which will help

ARTEMIS TRANSPARENT SETTLEMENTS
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Swiss Re & Nature Conservancy partner for parametric coral reef insurance

by ARTEMIS on MARCH 12, 2018

Global reinsurance giant Swiss Re has partnered with The Nature Conservancy (TNC), a leading global nature conservation organisation, to create a parametric insurance policy that can be used to both insure and enhance the resilience of coral reefs and the communities that rely on them.

The parametric insurance product, which is currently in-design, will aid conservation and swift restoration of the coral reefs covered, if damaged by a major hurricane event.

As well as directly protecting coral reefs, the novel product is also designed to support the economic resilience of the region or community that relies on the reef, for tourism, fishing etc, thus helping to make communities more resilient to a portion of the economic damages that can occur from natural catastrophe events.

Summary



Next steps:

- Publication of the regional and national overview papers
- Further investigation of innovative funding opportunities to address both ecosystem services and industry needs
- Work with regional partners to identify opportunities and needs for stakeholder engagement in each of the three regions