

Regional & State Solutions to Bioenergy & Biofuel Challenges

Jake Fey

Director

WSU Extension Energy Program

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**Pacific Region – A six state-based team of
AK, HI, ID, MT, OR & WA**

www.pacificbiomass.org

\$93 Million in biennial state funds

Functions as a team since 1983

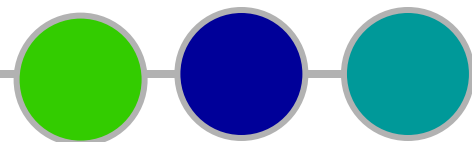
**Taken together: A “Complete Program” –
Near, mid and long term research;
development; demonstration; deployment;
policy analysis & legislation; information;
outreach**

**Strong ties to USDA. U.S. DOE no longer
participates**

Bioenergy is booming at the regional & state level

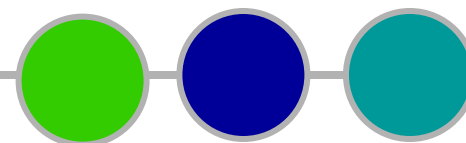
Biofuels, Biopower, Bioproducts

- Funding for all three areas
- Policy & legislation moving forward
- Context: The 25 X '25 food, feed, fiber, and fuel
- Sustainability is strong in Pacific region
- A developing rural opportunity – but, not on autopilot
- Agriculture and forest



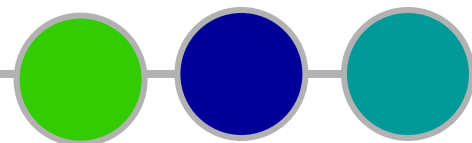
Why regional & state approach is needed?

- The balance between regional & state effort varies by region/geographic sizes of state
- Some analytical work must be done at a regional or state level
- Goals can vary by state & region
- We have a long way to go and a short time to get there



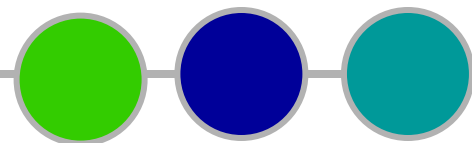
Example: Inventory analysis – how much can we get?

- Feedstocks vary widely around the country
- Also within a region (tropical for HI & boreal forest for AK)
- Example of where state level inventories are essential
- ORNL “Billion Ton Report” – Undercounts the West and other forest states – WA has 70% undercount
- State inventories with common ground rules needed – Conclusion of DOE-State meeting this summer



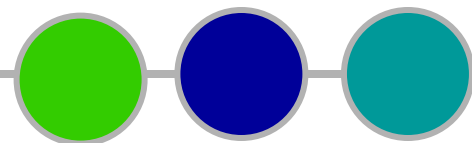
Washington Biomass Inventory and Bioenergy Assessment

- One of the best inventories and assessments in the nation
- 44 sustainable feedstocks inventoried
- 16.9 million tons of dry underutilized biomass
- 1,769 MWc of potential power
- Growing energy crops & forest data would be additional
- www.pacificbiomass.org has an interactive map and database by county



Alignment – Pay attention to your goals

- Goals vary by state and region
- Example: Biodiesel is a strong Pacific region goal (We can do biodiesel now with strong proportional use of diesel compared to gasoline – one third)
- Biodiesel is not a U.S. DOE goal
- Being “un-aligned” is ok
- Sometimes align and sometimes not



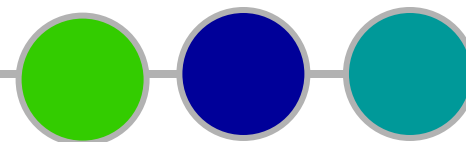
Biofuels – Proposed Plants Snapshot – January 2007

Ethanol

• ID	135 MGY	21.9 % of Motor Gasoline
• MT	347 MGY	69.3 %
• OR	358 MGY	18.8 %
• WA	447 MGY	16.5 %

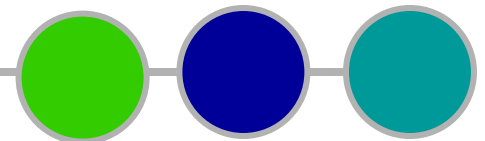
Biodiesel

• ID	55 MGY	13.7 % of Middle Distillates
• MT	45 MGY	10.7 %
• OR	37.4 MGY	2.4 %
• WA	260.5 MGY	26.0 %



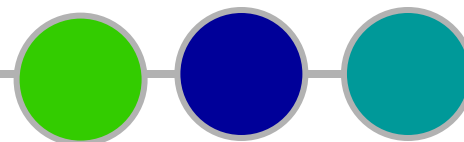
Alaska

- Alaska Energy Authority
- Barged in diesel runs power to a range of \$.21-.80/kWh
- Alaska Energy Inventory – Governor mandate – 2007 Funding - \$500,000
- Inventory is underway with major biomass component
- Alaska roadmaps – Alaska Rural Energy Plan, Railbelt Energy Plan
- Alaska Wood Energy Development Task Group
- Wood fired district heating – RSOI 2007
- Fish oil biodiesel
- Staff increase – Bioenergy now has 3 staff
- University of Alaska – Artic Energy Technology Development Laboratory



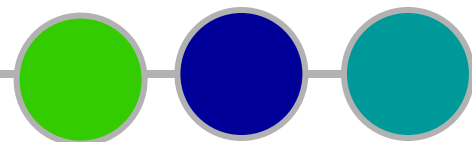
Hawaii

- **State Energy Office is in the Dept. of Business, Economic Development & Tourism – Strategic Industries Division**
- **State Policies and Incentives**
 - 1994 -- 10% Ethanol Mandate – implemented April 2, 2006 by administrative rule
 - 2004 -- RPS enacted with percentages rising to 20% by 2020
 - 2006 – Energy For Tomorrow Comprehensive Energy Package: “Fuels Through Farming” components
 - RPS statute strengthened
 - Alternative Fuels Standards for highway fuel use with percentages rising to 20% by 2020
 - State biofuels purchase preference of 5 cents/gal
 - \$200,000 for statewide biofuels production assessment now underway.
 - \$150,000 for the Department of Agriculture to assist with biofuel projects
 - 2007 – Continued emphasis on bioenergy
 - Act 253 - \$300,000 appropriated for a Bioenergy Master Plan
 - Act 261 - \$59 million in special purpose revenue bonds authorized for BlueEarth Maui Biodiesel, LLC plant on Maui. 40 million gal/yr scale up to 120 million gal/yr
 - Act 159 – Allows biofuel production facilities on agriculture-zoned lands
 - Act 209 – Exempts alcohol fuels from state excise taxes
 - SCR 164 – Requires a study to create a one-stop shop permit shop for renewable energy projects



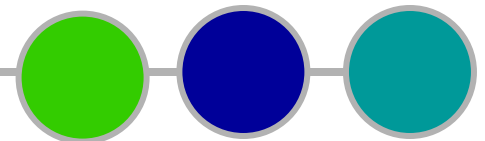
Hawaii

- Other recent support
 - Report -- Biomass and Bioenergy Resource Assessment, 2002
 - Report – Potential for Ethanol Production in Hawaii, 2006
 - Report – Biodiesel Crop Implementation in Hawaii, 2006
 - Governor’s Hawaii Biofuels Summit, 2006
 - Hawaii Bioenergy Workshop, 2006
 - Ethanol Implementation Workshops, 2006
- Research Experts
 - University of Hawaii – College of Tropical Agriculture and Human Resources, Hawaii Natural Energy Institute
 - Hawaii Agricultural Research Center



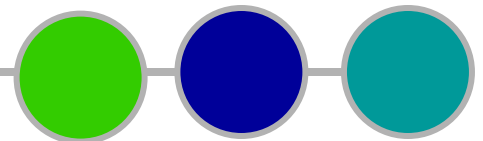
Idaho

- Idaho Department of Water Resources
- Idaho has a long biodiesel history
- Fueling station grants - \$690,000 – for E-85 and biodiesel
- Pacific Ethanol - \$380,000 infrastructure grant for 50 MGY plant
- National Biodiesel Education Program – At University of Idaho (since 1979) - Jon Van Gerpen
- Brassica Breeding and Research - University of Idaho
- Idaho Roadmap – Idaho Energy Plan 2007 by State Legislature
- Feasibility studies
- Iogen – Major cellulosic ethanol grant from DOE – February 2007 for \$80 million – Plant located in Shelley, ID



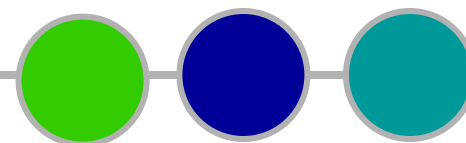
Montana

- Montana Department of Environmental Quality
- Ethanol mandate with 40 MGY trigger & Renewable Electricity Std.
- Tax incentives
- Strong biofuels program (ethanol & biodiesel) – State working group
- Biopower and bioheat – Fuels for Schools (\$450,000) & Woody Biomass Work Group
- Roadmap: Climate Change Policy Plan – Biomass/biofuels prominent
- Environmental expertise is a key strength
- Fuel testing lab at Havre, MT - \$250,000 for equipment
- Strong training and outreach effort
- Montana State - Camelina



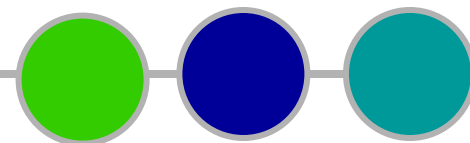
Oregon

- Oregon Departments of Energy, Agriculture & Forestry
- Oregon roadmap: Renewable Energy Action Plan April 2005 with strong bioenergy section
- RFS & RPS - 2007
- Very strong state tax incentives from grower to facility development – Strengthened in 2007
- Biomass inventory 04 2006 with update underway
- Three working groups – Agriculture, forest and urban plus state team
- 20 MW of biopower under construction with 15 MW permitted – Hog fuel is at \$45/ton
- State staffing is increasing – 3.3 FTE
- Oregon State – Sun Grant & canola



Washington

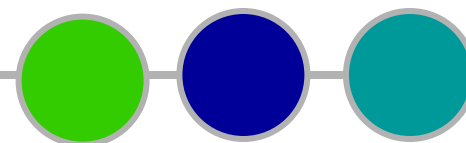
- Washington Departments of CTED, Agriculture, Ecology & WSU EEP – Broader State Bioenergy Team
- RFS & RPS - 2006
- Biomass inventory 12 2005 and feedstock characterization 07 2007
- \$23 million in biennial bioenergy capital projects – Energy Freedom Program
- \$8.8 million in biennial operating bioenergy budget
- State staffing is increasing – 5.3 FTE
- Washington roadmap – Nine legislative studies underway
- Center for Bioproducts & Bioenergy – WSU & PNNL - \$2.0 million
- Near-term research – \$2.0 million
- Beyond Waste - Organic waste to resources - \$1.35 million



The opportunity and need

Three dollars a gallon

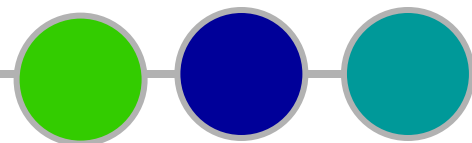
- We can do corn ethanol and biodiesel now
- Protection from rising fossil fuel prices
- Keeps energy dollars local/in-state
- Energy independence
- Environmental improvements
- But, the economics have to work
 - on-farm and throughout the value chain



The fit of bioenergy - unique

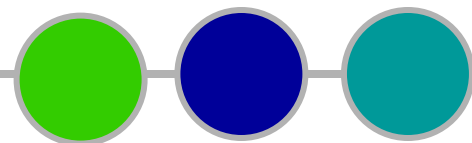
It does not stand alone – dovetails with other renewables and energy efficiency

- Biofuel – With lightweighting, plug-in hybrids and major efficiency gains
- Biopower – Part of our renewable options for forest products and dairy/feedlot
- Bioproducts – Synthetic glycerin plant closes in Freeport, TX



Economics and co-products

- Co-products are necessary for the economics to work
- Has to impact the whole value chain – starting at the farm
- Kate Painter, Enterprise Budgets, Climate Friendly Farming
www.cff.wsu.edu
- Biodiesel example
 - Ownership options
 - On-farm
 - At the crusher – shipping DDG and meal from Mid-West
 - At the biodiesel facility - glycerin



Largest Extension-Based Energy Program in the Country

Staff of 60

Engineers

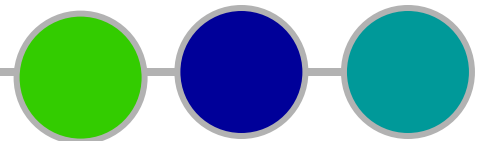
Energy specialists

Scientists

Web and graphics

Other professionals

\$5-6 million annual budget



A national leader & catalyst for creating powerful energy solutions

EXPERIENCE & EXPERTISE



Vision
Vision

MEETING TODAY'S ENERGY NEEDS



UNMATCHED ENERGY SERVICES



PROMOTING SUSTAINABLE PRACTICES

