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April 28, 2015

TO: House Committee on Revenue

FROM: Andy Ginsburg, Assistant Director, Planning and Innovation

SUBJECT: HB 2449 A-Engrossed - Bioenergy Incentive Program

INTRODUCTION

The Oregon Department of Energy supports HB 2449A. The bill would restructure and improve the existing Biomass Producer or Collector Tax Credit program to promote additional development of Oregon's bioenergy industry and improve the benefit the state receives from this program.

Bioenergy in Oregon is comprised of a variety of types of biomass feedstocks, technologies and energy. Biomass is used to create electricity, transportation fuels, and heat for building and industrial uses. Bioenergy systems help support key Oregon industries such as forest products manufacturing, food processing, dairy and agriculture, water treatment and the manufacturing and transportation jobs that support these industries. Biomass utilization can help reduce costs to industry, offer a beneficial use for material that would otherwise go to waste, and support natural resource objectives such as forest health restoration, greenhouse gas reduction, and reduction of nutrient runoff.

The existing program, which was adopted in 2007, offers a tax credit for biomass that is produced or collected in Oregon and used as biofuel or to produce biofuel in Oregon. To be eligible for the tax credit, the applicant must be a biomass collector or an agricultural producer. The specific types of eligible biomass and applicable credit rates are provided in statute.

Since 2010, the Oregon Department of Energy has administered a certification process for these tax credits. The certification process verifies the eligibility of the biomass, the quantity delivered, and the use of the biomass to produce power or biofuel. The department certified nearly \$22 million in tax credits from 2010 through 2014. The program has provided tax credits for about 1.3 million tons of woody biomass, 11.3 million gallons of used oil and waste grease, and 1.6 million tons of animal manure that was delivered for energy production.

Appendix 1 is a map showing the location of existing bioenergy facilities in Oregon and appendix 2 provides a list of these facilities by technology. Appendix 3 shows the utilization of the biomass producer or collector tax credit by feedstock from 2010 to 2014. As this appendix indicates, there have been changes in the utilization of this incentive over this period. These changes were primarily driven by

a reduction in the value of the tax credit for woody biomass that went into effect in 2012 and the development of new anaerobic digestion facilities using animal manure.

HB 2449A proposes three major changes to the program:

- First, the bill would modify the types of eligible biomass, update the tax credit rates and give the department limited authority to further update tax credit rates through rulemaking in the future to keep them in line with market conditions.
- Second, the bill would establish a six year pilot to transition the program from one that offsets the cost of production, collection and transportation of biomass feedstock to one that provides a performance-based incentive for energy production.
- Third, the bill would extend the sunset for the program, and help provide needed certainty to applicants planning business expansions by reviewing the program two years before the sunset rather than less than a year before the sunset.

WHAT HOUSE BILL 2449A DOES

House bill 2449A establishes a six-year pilot program for bioenergy production, makes improvements to the current tax credit program, and authorizes the bioenergy incentive programs through tax year 2021. Appendix 4 is a section-by-section explanation of HB 2449A and Appendix 5 is a timeline showing key changes to the program since its inception in 2007.

<u>Pilot</u>

HB 2449A would establish a pilot program to provide an energy production-based incentive for woody biomass, anaerobic digestion and biomass heating systems:

- The pilot program would have a \$15 million cap each biennium.
- Within this cap, the pilot would support up to 15 average annual megawatts of electricity from woody biomass, 650 million standard cubic feet of biogas from anaerobic digestion, and the equivalent of 100,000 therms of annual thermal energy for space heating at schools, hospitals, industrial or other facilities.
- New, re-started or expanded projects would be given preference in the pilot program.
- Pilot projects would be selected through a process using the criteria established in the bill such as energy production, job creation, emission reduction, and contribution to state energy, natural resource, and water management goals.
- The Port of Tillamook Bay, which operates a community manure digester, would have the ability to opt into the pilot or continue to receive feedstocks from producers that participate in the existing program.
- The department would report on the results of the pilot to the legislature each biennium.

Existing program

HB 2449A would also update and improve the existing producer or collector tax credit program.

- The definition of biomass used in the statute that sets the credit rates (ORS 469B.403) would be aligned with the existing definition used in the tax credit eligibility statute (ORS 315.141).
- The bill would make several adjustments to the credit rates for specific feedstocks based on changes in market conditions:

- The credit rates for waste grease and for used oil would be separated. The credit rate for waste grease would remain at \$0.10 per gallon and the credit rate for used oil would be reduced to \$0.05 per gallon.
- A credit rate would be added for food processing residues and for food waste from residential, commercial and institutional sources. Both credit rates would be set at \$5 per wet ton.
- The credit rates for animal manure and for offal or tallow would be separated. The credit rate for animal manure would be reduced from \$5.00 to \$3.50 per wet ton and the credit rate for offal or tallow would be unchanged at \$5 per wet ton.
- In addition to adjusting credit rates, the bill would provide the department with limited authority to further adjust the credit rates by rule based on changes in market conditions such as processing and transportation costs, technology advancements and alternative uses. Rates could not be changed before tax year 2017 or by more than 25% in a given tax year.
- Eligibility for both the current program and the pilot program would be extended to nontaxpayers such as ports, municipalities, tribal entities and nonprofits.
- A given unit of biomass could not receive credit under both the existing program and the pilot.

<u>Sunset</u>

HB 2449A would extend the program's existing sunset from 2017 to 2021.

- Under the normal cycle, this program would be reviewed and considered for extension during the 2017 legislative session.
- Stakeholders have informed the department that reviewing the program so close to the sunset creates business uncertainty, which makes the program less efficient.
- To address this concern, HB 2449A would extend the program two years early.
- However, further consideration of the proposed sunset date may be needed as the department has learned that starting a six year extension two years early would put this tax credit out of cycle with other tax credits.

DISCUSSION

Oregon receives a variety of energy and non-energy benefits for the investment in the Biomass Producer or Collector Tax Credit. As detailed in the department's responses to policy questions from the Tax Credit Committee (Appendix 6), the program was originally adopted in 2007 as part of a broad biofuels package intended to reduce Oregon's dependence on foreign oil, stimulate markets and reduce greenhouse gas emissions. Its effect has been to divert biomass from the waste stream, using it instead to produce renewable energy. The proposed pilot would focus the program more specifically on incentivizing new or expanded in-state bioenergy production facilities.

Both the existing and pilot programs also provide a wide range of non-energy benefits, such as supporting forest health treatments, nutrient management on dairy farms, and providing alternatives to non-value added disposal techniques. For example JC Biomethane, located near Junction City, takes in food waste from the Portland region, generates renewable biogas and electricity, and also produces as one of its by-products a renewable fertilizer product that is compatible with organic agriculture.

The biomass producer tax credit makes these benefits possible by offsetting the cost to produce, collect, process and transport the biomass material from its origin in our forests, fields and urban environments to an energy production facility. These are costs that solar, geothermal and wind energy do not have because those renewable energy sources do not rely on fuel that must be produced and transported. Without the biomass producer and collector tax credit, less biomass would be diverted from the waste stream to produce renewable energy and the attendant non-energy benefits.

The existing program works by providing a tax credit directly to the biomass collectors or agricultural producers to help them deliver biomass to energy facilities at a price that energy facilities can afford to pay. The proposed pilot program bases the incentive on the specific difference between the cost to produce bioenergy and the price for which that energy can be sold. The pilot provides the incentive directly to the energy producers, which would enable them to purchase biomass feedstocks for the true cost required to deliver it to their facilities. This approach is expected to be more efficient and better incentivize new, expanded or reopened bioenergy production facilities. These new, expanded, or reopened facilities may allow for the utilization of additional biomass that is located too far away from an existing bioenergy facility to be gathered economically even with the current incentives.

If the incentive program were ended, the amount of biomass that is used for energy production in Oregon would decline. However, the credit rate needed has declined in some cases as the market for a specific feedstock matured. For example, HB 2449A proposes to reduce the tax credit for used oil by 50 percent because that market has become more mature. This change is not expected to result in a decline of used oil for biofuel production since Oregon-based biofuel manufacturers have long-term purchase contracts and geographically broad markets. In other cases, such as woody biomass, the tax credit may not be adequate due to the costs of collecting and transporting material from forest restoration projects to energy production facilities. The proposed pilot program would address this problem by establishing an incentive based on the specific costs to deliver woody biomass to an energy production facility.

Appendix 7 shows the projected impact of HB 2449A on revenue from 2015 through the proposed sunset of 2021. For this six-year period, the program is projected to result in a revenue reduction of \$88.4 million, or \$29.3 million more than extending the program for six years without the other changes proposed in HB 2449A. The chart shows the effect on revenue from adding the pilot, reducing the credit rate for animal manure and adding a credit rate for food waste and food processing residues.

SUMMARY

The Oregon Department of Energy supports HB 2449A. The bill would establish a six year pilot for a production-based tax credit program for bioenergy and make modifications and improvements to the existing Biomass Producer or Collector Tax Credit. The bill would extend the sunset through 2021 for the existing tax credit program and the pilot program. HB 2449A would maintain long-term predictability and stability for the Oregon industries that rely on a biomass incentive.

The Department of Energy asks for your support of HB 2449A.

Primary Fuel

- Biofuel
- Biogas
- Biomass Thermal
- O Landfill Gas
- Wood Pellet
- Woody Biomass





Woody Biomass Combined Heat and Power

| Name | Status | Nameplate Capacity (MW) | Year Installed | City | County |
|-------------------------------------|-----------|----------------------------|----------------|----------------------|-----------|
| Biomass One 1 & 2 | Operating | 30 | 1985 | White City | Jackson |
| Boise 1 & 2 (Medford) | Idle | 8.5 | 1956 | Medford | Jackson |
| Cogen II (DR Johnson) | Idle | 7.5 | 1987 | Riddle | Douglas |
| Collins Wood Products | Idle | 7.5 | | Klamath Falls | Klamath |
| Douglas County Forest Products | Operating | 3.2 | 2006 | Winchester | Douglas |
| Freres Lumber (Evergreen BioPower) | Operating | 10 | 2007 | Lyons | Marion |
| Interfor Pacific Gilchrist | Operating | 1.5 | 1938 | Gilchrist | Klamath |
| Prairie Wood Products (Cogen I) | Idle | 7.5 | 1986 | Prairie City | Grant |
| Roseburg Forest Products (Dillard) | Operating | 51.5 | 1955 | Dillard | Douglas |
| Rough & Ready Lumber | Operating | 1.28 | 2008 | Cave Junction | Josephine |
| Seneca Saw Mill | Operating | 18.8 | 2011 | Eugene | Lane |
| SP Newsprint TG1 and TG2 | Idle | 55.3 | 1979 | Newberg | Yamhill |
| Wallowa IBEC | Operating | 0.1 | 2012 | Wallowa | Wallowa |
| Warm Springs Forest Products 1 - 3 | Operating | 9 | 1976 | Warm Springs | Wasco |
| Georgia-Pacific (Toledo) | Operating | 30 | 1954 | Toledo | Lincoln |
| Georgia-Pacific (Wauna) | Operating | 36 | 1996 | Wauna | Clatsop |
| International Paper (Springfield) 1 | Operating | 68.7 | 1949 | Springfield | Lane |





Bioenergy Facilities in Oregon

| -6 | OREGON DEPARTMENT OF ENERGY |
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| | Year | | |
|--|-----------|----------------------|------------|
| Name | Installed | City | County |
| Harney District Hospital | 2007 | Burns | Harney |
| Oakridge Elementary School | 2012 | Oakridge | Lane |
| Illinois Valley High School | 2011 | Cave Junction | Josephine |
| Sisters High School | 2011 | Sisters | Deschutes |
| Blue Mountain Hospital | 2011 | John Day | Grant |
| Days Creek Charter School | 2011 | Days Creek | Douglas |
| Grant Union School | 2012 | John Day | Grant |
| Enterprise School District | 2007 | Enterprise | Wallowa |
| Prairie City School | 2011 | Prairie City | Grant |
| Estacada High School | 2011 | Estacada | Clackamas |
| Evergreen Elementary School | 2011 | Cave Junction | Josephine |
| Grant County Regional Airport | 2012 | John Day | Grant |
| Deschutes National Forest Supervisor's | 2011 | Bend | |
| Office | | | Deschutes |
| Burns High School | 2009 | Burns | Harney |
| Tillamook Forest Center | 2006 | Tillamook | Tillamook |
| BLM - Wildwood | 2011 | Welches | Clackamas |
| Milo Academy | 1950 | Days Creek | Douglas |
| Vernonia | 2011 | Vernonia | Columbia |
| Top-Hat, Inc | | Scio | Marion |
| Heesacker Farms | 2010 | Forest Grove | Washington |



Biomass Boiler at Blue Mountain Hospital, John Day



Biofuel Production Facilities

| Name | Product | City | County |
|-------------------------------|----------------------------|---------------|---------------|
| Sequential Biofuels | Biodiesel | Salem | Marion |
| ZeaChem | Aviation Fuel / Ethanol | Boardmand | Morrow |
| Beaver Biodiesel | Biodiesel | Portland | Multnomah |
| Pacific Ethanol | Ethanol | Boardman | Morrow |
| Lookout Mountain Biodiesel | Biodiesel | Prineville | Crook |
| Rogue Biofuels | Biodiesel | Ashland | Jackson |
| GreenFuels of Oregon | Biodiesel | Klamath Falls | Klamath Falls |



SeQuential-Pacific Biodiesel, Salem

Pellet Manufacturing Facilities

| | Year | | |
|-------------------------|-----------|---------------|------------|
| Name | Installed | City | County |
| Bear Mountain Forest | 1984 | Brownsville | |
| Products | | | Linn |
| Bear Mountain Forest | 1984 | Cascade Locks | |
| Products | | | Hood River |
| Ochoco Lumber | 2011 | John Day | Grant |
| Frank Pellets | 2009 | Lyons | Marion |
| Blue Mountain Lumber | 2008 | Pendleton | |
| Products | | | Umatilla |
| Woodgrain Millwork Inc. | 2009 | Prineville | Crook |
| Pacific Pellet LLC | 2010 | Redmond | Deschutes |
| Dillard Composite | 2009 | Roseburg | |
| Specialties - Roseburg | | | |
| Forest Products | | | Douiglas |
| West Oregon Wood | 2009 | Banks | |
| Products Inc. | | | Columbia |
| West Oregon Wood | 1985 | Columbia City | |
| Products Inc. | | | Columbia |





Anaerobic Digestion Facilities

| Name | Nameplate Capacity (MW) | Year Installed | City | County |
|--|-------------------------------|----------------|---------------|------------|
| Cal-Gon Dairy | 0.1 | 2002 | West Salem | Marion |
| Farm Power Misty Meadow | 0.75 | 2013 | Tillamook | Tillamook |
| Farm Power Tillamook | 1 | 2012 | Tillamook | Tillamook |
| Hooley Digester 1 - 2 | 1.2 | 2003 | Tillamook | Tillamook |
| JC Biomethane | 1.55 | 2013 | Junction City | Lane |
| RES - Forest Glen Oaks Dairy | 0.37 | 2012 | Dayton | Yamhill |
| RES - Lochmead Dairy | 0.19 | 2012 | Junction City | Lane |
| RES - Oak Lea Dairy | 0.165 | 2012 | Aumsville | Marion |
| Stahlbush Island Farms | 1.6 | 2009 | Corvallis | Benton |
| Threemile Canyon Farms Digester | 4.8 | 2012 | Boardman | Morrow |
| City of Gresham Wastewater Treatment Plant | 0.395 | 2000 | Gresham | Multnomah |
| City of Medford Wastewater Treatment Plant | 0.75 | 1999 | Medford | Jackson |
| Columbia Blvd Wastewater Treatment Plant | 1.73 | 2008 | Portland | Multnomah |
| Corvallis Wastewater Treatment Plant | 0.06 | | Corvallis | Benton |
| Durham Wastewater Treatment Plant | 0.5 | 1999 | Durham | Washington |
| Eugene/Springfield Regional Water Pollution Control Facility | 0.84 | 2000 | Springfield | Lane |
| Kellogg Creek Wastewater Treatment Plant | 0.25 | 2000 | Milwaukee | Clackamas |
| Pendleton Wastewater Treatment Plant | 0.13 | | Pendleton | Umatilla |
| Rock Creek Wastewater Treatment Plant | 0.5 | 2000 | Hillsboro | Washington |
| Tri-City Service Dist. Wastewater Treatment Plant | 0.25 | 2000 | Oregon City | Clackamas |
| Willow Lake Wastewater Treatment Plant | 0.825 | 1999 | Salem | Marion |

Bioenergy Facilities in Oregon



Landfill Gas to Energy Facilities

| Name | Nameplate Capacity (MW) | Year Installed | City | County |
|---------------------------------|----------------------------|----------------|-------------|---------|
| Coffin Butte 1 - 5 | 5.2 | 1995 | Corvallis | Benton |
| Columbia Ridge Landfill | 7 | 2009 | Arlington | Gilliam |
| Dry Creek Landfill | 3.2 | 2007 | Eagle point | Jackson |
| Finley Buttes Regional Landfill | 4.8 | 2007 | Boardman | Morrow |
| Riverbend Landfill | 4 | 2010 | McMinville | Yamhill |
| Short Mountain 1 - 4 | 3.2 | 1992 | Eugene | Lane |



Coffin Butte Landfill, Corvallis



JC Biomethane, Junction City

Sources: Northwest Power and Conservation Council, U.S. Energy Information Administration, Oregon Department of Energy

Biomass Producer and Collector Tax Credit History by Feed Stock

| 2010 BIOMASS TAX CREDITS 91,569 WT 91,569 WT 515,713 1,513 1,548 0,0122 2,23 8,831 1,5173 1,518 1,548 0,0122 2,23 8,831 1,5178 1,518 1 | | Tax Year | Material QTY | Std Unit | Certification Amount | Million BTU* | Million BTU per Unit | Households Powered** | TC \$ Per Million BTU |
|--|--|-----------------------|-----------------|-------------|----------------------------|------------------------|----------------------------|-------------------------|-----------------------------|
| $ \frac{1}{2012} \frac{1}{1000} \frac{1}{100$ | 2010 BIOMASS TAX CREDITS | 2010 | | | | | | | |
| $ \frac{1}{2010} \frac{1}{201$ | Used Manure Oil Seed Oil/Grease | Manure | 91,569 | WТ | \$457,843 | 54,941 | 0.6000 | 722 | \$8.33 |
| Number Display Display <thdisplay< th=""> <thdisplay< th=""> <thdi< td=""><td>Yard Vegetative</td><td>Oil Seed</td><td>314,260</td><td>Gallons</td><td>\$15,713</td><td>1,688</td><td>0.1182</td><td>22</td><td>\$9.31</td></thdi<></thdisplay<></thdisplay<> | Yard Vegetative | Oil Seed | 314,260 | Gallons | \$15,713 | 1,688 | 0.1182 | 22 | \$9.31 |
| Ward Ward <th< td=""><td>Wastewater</td><td>Used Oil/Grease</td><td>1,526,759</td><td>Gallons</td><td>\$152,676</td><td>180,417</td><td>0.1182</td><td>2,371</td><td>\$0.85</td></th<> | Wastewater | Used Oil/Grease | 1,526,759 | Gallons | \$152,676 | 180,417 | 0.1182 | 2,371 | \$0.85 |
| Watewater Bioscilio 3,500 WT 5,31,807 6,481 2,480 6,787 9,788 6,51,25 2011 Stansa 33,600 WT 5,18,297 6,667,27 9,788 6,787 5,183 67,820 5,133 67,820 5,133 67,820 5,133 67,820 5,133 67,820 5,133 67,820 5,133 67,820 5,133 67,820 5,133 67,820 5,133 67,820 5,133 67,820 5,133 67,820 5,133 67,820 5,133 67,820 5,133 67,820 5,133 67,820 5,133 67,820 5,133 5,135 1,143 | Biosolid | Vegetative Biomass GT | 12,606 | WT | \$126,057 | 18,909 | 1.5000 | 248 | \$6.67 |
| Mark With Specify 100 Control Control Contre Control Control | | Wastewater Biosolid | 1,590 | WT | \$15,897 | 4,451 | 2.8000 | 58 | \$3.57 |
| G* 2010 Total 55.770,671 5,161,183 67,820 51.12 2011 BIOMASS TAX CREDITS Under Overser (1) Seed (1) Se | Woody Biomass | Yard Debris | 480,015 | WT | \$4,854,190 | 4,098,707 | 9.7888 6.0000 | 2 654 | \$1.05 \$0.83 |
| 2011 BIOMASS TAX CREDITS Under and the set of the set | GT | 2010 Total | 55,000 | | \$5,770,671 | 5,161,133 | 0.0000 | 67,820 | \$1.12 |
| Viet Uter 013 2011 Viet 5708,357 85,003 0.6000 1,117 S8.33 01 Seed 028,569.70 Gallons S24,458 4,454 0.182 59 50.31 Vegetative Biomass GT 228,87 WT S228,869 37,308 1.5000 491 S5.57 Vegetative Biomass GT 228,97 Gallons S5,41,288 4,974 2.808 52,329 S0.01 1.000 491 S5.57 S5.976 213,098 50.289 S0.91 S5.978 213,098 50.289 S0.97 S5.872 S5.971 S5.872 S0.975 S0.838 S1.14 2012 Mmure 147,190 WT S7.95,047 S6.834 0.600 1.160 S8.33 2013 Mmure 147,190 WT S7.95,047 S6.835 S1.14 2014 Gallons S7.970 B7.970 S9.770 B7.970 S0.2100 1.250 S0.62 2013 Gallons S7.970 <td< td=""><td>2011 BIOMASS TAX CREDITS</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<> | 2011 BIOMASS TAX CREDITS | | | | | | | | |
| Description 0.00000000000000000000000000000000000 | Yard Manure Oil Seed Used | 2011 Manure | 1/1 671 | ω/т | \$708 357 | 85 003 | 0 6000 | 1 1 1 7 | ¢8 33 |
| Used Ol/Grease 2,285,970 5215,970 5215,970 5215,090 51182 4,436 56.57 Used Ol/Grease 2,887 VT 522,388 7,949 2,2000 1,04 53.57 Woody Biomass CT 426,250 VT 522,388 7,949 2,2000 1,04 53.57 2012 BIOMASS TAX CREDITS Winterwater Biosolid Vir S12,334 485.794 63.314 6.6000 1,160 58.33 2012 BIOMASS TAX CREDITS Marure 147,190 VT 573.5947 88,314 0.6000 1,160 58.33 2012 BIOMASS TAX CREDITS Marure 147,190 VT 573.5947 88,314 0.6000 1,250 50.82 Vigetative Biomass 5,870 BDT 58,702 32,100 1,2400 8.333 50.57 2013 BIOMASS TAX CREDITS Vigetative Biomass 57,935 32,7005 3,7400 2,271 50.57 2013 BIOMASS TAX CREDITS Vigetative Biomass 57,935 31,7075 32,7000 7,4800 2,23726 | Debris Oil/Grease | Oil Seed | 829 160 | Gallons | \$708,337 | 4 454 | 0.0000 | 59 | \$0.33 \$9 31 |
| Vegetative Biomass GT Vegetative Biomass GT Var Debris VT S248,886 Vegetative Biomass GT Vegetative Biomass GT Vegetative Biomass GT Vegetative Biomass GT Vegetative Biomass GT Vegetative Biomass GT Var Debris VT S735,947 88,314 Vegetative Biomass GT Vegetative Biomass GT Vegetative Biomass GT Vegetative Biomass GT Var Debris VT S735,947 88,314 Vegetative Biomass GT Vegetative Biomass GT Vegetative Biomass GT Var Debris VT S735,947 88,314 Vegetative Biomass Var Debris 0.6000 Vegetative Biomass Var Debris 1.160 Vegetative Biomass Var Debris VT S735,947 88,314 Vegetative Biomass Var Debris 0.6000 Vegetative Biomass Var Debris 1.160 Vegetative Biomass Var Debris 0.0000 Vegetative Biomass Var Debris 0.0000 Vegetative Biomass Vegetative Biomass Ve | Vegetative | Used Oil/Grease | 2,856,970 | Gallons | \$285,697 | 337,608 | 0.1182 | 4,436 | \$0.85 |
| Wastewater Biosolid Wordy Wastewater Biosolid Wordy Biomass CT 28,83 WT 528,838 7,949 2.8000 1.04 53,53 (0,97) 2012 BIOMASS TAX CREDITS Weeks Used Oil/Grease 107 35,516 WT 527,837 88,314 0.6000 1,160 58,333 2013 BIOMASS TAX CREDITS Weeks Used Oil/Grease 147,190 WT 5735,947 88,314 0.6000 1,160 58,333 2013 BIOMASS TAX CREDITS Wastewater Biosolid Woody Biomass 147,190 WT 5735,947 88,314 0.6000 1,160 58,333 2013 BIOMASS TAX CREDITS Wastewater Biosolid Woody Biomass No Activity 138,7076 S0,770 53,87,00 17,4800 42,971 50,577 2013 BIOMASS TAX CREDITS Wastewater Biosolid Woody Biomass FG,79,35 WT 53,354,666 402,561 0.6000 5,290 58,33 2013 BIOMASS TAX CREDITS Weekstaver Biosolid Woody Biomass No Activity No Activity S10,33,61 0.1182 5,296 50,857 2014 BIOMASS TAX CREDITS Weekstaveel Biosolid Woody Biomass S0,410,076 </td <td>Biomass GT</td> <td>Vegetative Biomass GT</td> <td>24,887</td> <td>WТ</td> <td>\$248,869</td> <td>37,330</td> <td>1.5000</td> <td>491</td> <td>\$6.67</td> | Biomass GT | Vegetative Biomass GT | 24,887 | WТ | \$248,869 | 37,330 | 1.5000 | 491 | \$6.67 |
| Woody Biomass GT 426,250 WT \$4,056,098 427,2476 9,7888 54,829 50,977 2011 Total 2011 Total 55,514 213,098 63,836 \$1.14 2012 BIOMASS TAX CREDITS Marure 147,150 WT \$57,541,231 4,857,918 63,836 \$1.14 2012 BIOMASS TAX CREDITS Marure 147,150 WT \$5735,947 88,314 0.6000 1,160 \$8,333 Used Oli/Greese Vegetative Biomass 5,870 BDT \$58,702 \$95,155 16,2100 1,220 \$0,625 Vegetative Biomass 187,076 BDT \$1,870,763 3,270,090 17,4800 42,971 \$0,778 2013 Marure 670,935 WT \$3,334,666 402,651 0.6000 \$,290 \$8,33 Woody Woody Biomass 341,0855 Gallons \$341,0864 403,061 0.1182 \$,296 \$0,62 2013 Marure 670,935 WT \$3,33,005 1,805,535 17,4800 23,726 | Wastewater Biosolid | Wastewater Biosolid | 2,839 | WT | \$28,388 | 7,949 | 2.8000 | 104 | \$3.57 |
| or Yard Debris 35,516 WT 5172,363 213,098 6.0000 2,800 50,811 2012 BIOMASS TAX CREDITS Marure 147,190 WT \$735,947 8,814 0.6000 1,160 \$8,833 015 ecd Marure 147,190 WT \$735,947 29,516 0.1182 4,320 \$0.62 Watewater Biosolid No Activity . . 2012 4,320 \$0.62 Watewater Biosolid No Activity . \$1,870,763 3,270,090 17.4800 42,971 \$0.57 2013 BIOMASS TAX CREDITS Watewater Biosolid No Activity \$3,334,666 402,561 0.6000 \$2,290 \$8,33 Watewater Biosolid No Activity \$3,344,666 403,061 0.1182 \$2,926 \$0.85 Vegetative Biomass 3,410,855 Gallons \$3,41,086 403,061 0.1182 \$2,926 \$0.85 Viderase No Activity No Activity \$3,344,666 402,651 1.62.00 1,349 \$0.62 | Woody Biomass | Woody Biomass GT | 426,250 | WT | \$4,056,098 | 4,172,476 | 9.7888 | 54,829 | \$0.97 |
| 2011 Otal 55,941,231 4,85,718 63,636 51,14 2012 BIOMASS TAX CREDITS Manure 147,190 WT \$735,947 88,314 0.6000 1,160 \$8,331 2012 BIOMASS TAX CREDITS Manure 147,190 WT \$735,947 88,314 0.6000 1,160 \$8,333 2013 BIOMASS TAX CREDITS Vigentitive Biomass 5,870 BDT \$51,870,763 3,270,090 17,4800 42,971 \$0.57 2013 BIOMASS TAX CREDITS Vigentitive Biomass 5,870 BDT \$1,870,763 3,270,090 17,4800 42,971 \$0.78 2013 BIOMASS TAX CREDITS Vigentitive Biomass 5,870 BDT \$1,870,763 3,270,090 17,4800 42,971 \$0.78 2013 Creat 670,935 WT \$3,354,666 402,561 0.6000 5,290 \$8.33 Woody Biomass 3,410,855 Gallons \$341,086 403,061 0.1182 5,296 50.57 2014 Petimisen No Activity No Activity No Activity | GT | Yard Debris | 35,516 | WT | \$172,363 | 213,098 | 6.0000 | 2,800 | \$0.81 |
| 2012 BIOMASS TAX CREDITS 2012 Manure Different Denner 147,190 Used Offerese Vegetative Biomas 147,190 No Activity Vegetative Dised Differese Vegetative Dised Differese Vegetative Dised Differese Vegetative Dised Differese Vegetative Dised Differese Vegetative Dised Differese Vegetative Dised Differese Vegetative Dised Differese Vegetative Dised Differese Vegetative Dised Differese Vegetative Differes | | 2011 10tai | | | Ş 5,541,23 1 | 4,857,918 | | 03,830 | Ş1.14 |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$ | 2012 BIOMASS TAX CREDITS | 2012 | | | | | | | |
| Oil Seed No Activity Just 2000/Grease | Manure | Manure | 147,190 | WT | \$735,947 | 88,314 | 0.6000 | 1,160 | \$8.33 |
| Used Oil/Grease 2,788,491 Gallons 5278,854 329,516 0.1182 4,330 50.85 Watewater Biosolid No Activity No Activity S58,702 95,155 16,2100 1,250 50,62 2013 BIOMASS TAX CREDITS Yard Debris No longer Eligible 52,944,266 3,783,075 49,712 50,77 2013 BIOMASS TAX CREDITS Woody Biomass 6,70,935 VT 53,354,666 402,561 0.6000 5,290 58,833 Used Oil/Grease 6,70,935 VT 53,354,666 402,561 0.6000 5,290 58,833 Used Oil/Grease 6,73,385 Gallons 5341,086 403,061 0.1182 5,296 50.85 Vegetative Biosolid No Activity No longer Eligible 102,055 17,4800 23,726 50,57 2014 BIOMASS TAX CREDITS Watewater Biosolid No Activity No longer Eligible 20,620 4,879,208 2,713,811 35,661 51,77 2014 BIOMASS TAX CREDITS Woody Biomass 8,76,607 79,955 0 | | Oil Seed | No Activity | | | - | | | |
| Vegetative Bioonlas No Activity 5,870 B01 558,702 95,155 16,2100 1,250 5,022 Voory Biomass Vegetative Biomass Vegetative Biomass S,870 B01 558,702 95,155 16,2100 1,250 5,052 2012 Total S0,07 B0T \$1,870,763 3,270,090 17,4800 42,971 \$0,577 2012 Total Congregative Biomass Congregative Signative Vegetative Biomass Congregative Signative Signative Vegetative Biomass VT \$3,354,666 402,561 0.6000 5,290 \$8,33 Used Oil/Grease 3,410,855 Gallons \$341,086 403,061 0.1182 5,296 \$0,62 Vegetative Biomass Vegetative Biomass No Activity No Activity No Activity S0,053 17,4800 23,726 \$0,577 Z014 BIOMASS TAX CREDITS Vegetative Biomass Variable Coll/Grease S21,534 VT \$2,584,987 312,920 0.6000 4,112 \$8,26 Z014 BIOMASS TAX CREDITS Vegetative Biomass Vegetative Biomass Variable Coll/Grease S67,607 Gallons \$67,660 <td>lied</td> <td>Used Oil/Grease</td> <td>2,788,491</td> <td>Gallons</td> <td>\$278,854</td> <td>329,516</td> <td>0.1182</td> <td>4,330</td> <td>\$0.85</td> | lied | Used Oil/Grease | 2,788,491 | Gallons | \$278,854 | 329,516 | 0.1182 | 4,330 | \$0.85 |
| Non-Children No-Children </td <td>Oil/Grease</td> <td>Vegetative Biomass</td> <td>5,870</td> <td>BDI</td> <td>\$58,702</td> <td>95,155</td> <td>16.2100</td> <td>1,250</td> <td>\$0.62</td> | Oil/Grease | Vegetative Biomass | 5,870 | BDI | \$58,702 | 95,155 | 16.2100 | 1,250 | \$0.62 |
| Woody/ Biomass Vegetative Biomass Yard Debris No longer Eligible Kolonger Eligible | | Woody Biomass | 187.076 | BDT | \$1.870.763 | 3.270.090 | 17.4800 | 42.971 | \$0.57 |
| 2012 Total \$2,944,266 3,783,075 49,712 \$0.78 2013 BIOMASS TAX CREDITS Weddy Used Oil/Grease Oil/Grease 01 Seed 3,410,855 WT \$3,354,666 402,561 0.6000 5,290 \$8.33 Used Oil/Grease Oil/Grease 3,410,855 Gallons \$341,086 403,061 0.1182 5,296 \$0.85 Vegetative Biomass Used Oil/Grease 0,3291 BDT \$1,033,005 1,805,535 17.4800 23,726 \$0.57 2014 BIOMASS TAX CREDITS Used Oil/Grease 00 loger Eligible X0 loger Eligible X1,085 \$4,92,083 2,713,811 35,661 \$1.77 2014 BIOMASS TAX CREDITS Woody Biomass Yeard behris No Activity Yeard behris No Activity X1,822 \$1,805,535 \$1,480 \$3,12,200 0.6000 4,112 \$8,261 Oil Seed No Activity Yeard behris No Activity X0 \$2,946,230 \$1,875,707 \$2,464 \$1,57 Z010-2014 BIOMASS TAX CREDITS Woody Biomass No Activity No Activity Yeard behris Yeard behris \$1,422,532 \$1,480,532 | Woody/ Vegetative Biomass Biomass | Yard Debris | No longer Eli | gible | + _ / _ · _ / · | | | , | 10.01 |
| 2013 BIOMASS TAX CREDITS 2013 Manure 670,935 WT \$3,354,666 402,561 0.6000 \$5,290 \$8.33 Oil Seed No Activity No Activity \$341,085 633,32 102,654 16.2100 1,349 \$0.62 Woody Biomass 103,291 BDT \$1,033,005 1,805,535 17.4800 23,726 \$0.57 Yard Debris No longer Eligible 2013 Total 54,792,083 2,713,811 35,661 \$1.77 Z014 BIOMASS TAX CREDITS Manure 001/Grease 676,607 Gallons \$67,660 79,955 0.1182 1,051 \$0.85 Woody Biomass No Activity No Activity No Activity S293,583 1,482,532 17.4800 19,481 \$0.20 Vegetative Biomass No Activity No Activity No Activity S293,583 1,482,532 17.4800 19,481 \$0.20 Vegetative Biomass No Activity No Activity S293,583 1,482,532 17.4800 19,481 \$0.20 | 21011103 | 2012 Total | | | \$2,944,266 | 3,783,075 | | 49,712 | \$0.78 |
| Vocaty Biomass Vegetative Biomass Vocaty Vegetative Used Oil/Grease VT 3,410,855 S3,354,666 402,561 0.6000 5,290 \$8.33 Vegetative Biomass Vad No Activity Used Oil/Grease 3,410,855 Gallons \$3,410,866 403,061 0.1182 5,296 \$0.85 Vegetative Biomass Vad Debris No Activity Woody Biomass No Activity No longer Eligible \$1,033,005 1,805,535 17.4800 23,726 \$0.57 2014 BIOMASS TAX CREDITS Vad Debris Z014 Preliminary Manure \$21,534 WT \$2,584,987 312,920 0.6000 4,112 \$8.26 Oil/Grease Oil/Grease Yard Debris No Activity Wastewater Biosolid No Activity WT \$2,584,987 312,920 0.6000 4,112 \$8.26 Oil/Grease Oil/Grease Yard Debris No Activity S2,584,987 312,920 0.6000 4,112 \$8.26 Oil/Grease Oil/Grease Yard S2,546,077 Gallons \$67,660 79,955 0.1182 1,051 \$0.85 Vad Debris No Activity S2,946,230 1,875,407 | 2013 BIOMASS TAX CREDITS | 2012 | | | | | | | |
| Biomas On Octivity On Octivity <t< td=""><td>Woody</td><td>2013 Manure</td><td>670 935</td><td>wт</td><td>\$3 354 666</td><td>402 561</td><td>0 6000</td><td>5 290</td><td>\$8.33</td></t<> | Woody | 2013 Manure | 670 935 | wт | \$3 354 666 | 402 561 | 0 6000 | 5 290 | \$8.33 |
| Vegetative Biomass Used Oil/Grease 3,410,855 (5,333 6allons (5,333 641,085 (5,327) 403,061 0.1182 5,296 (16,210) 50,855 (16,210) 50,855 (17,800) 51,033,005 1,805,535 17,4800 23,726 50,577 (17,800) Voody Voody Biomass Vard Debris Voody Biomass Vard Debris Voody Biomass Vard Debris No longer Eligible 54,792,083 2,713,811 35,661 51,777 Z014 Preliminary Manure No Activity Vard Debris No Activity No Activity No Activity No Activity No Activity 1,82,532 17,4800 19,481 50,207 Z010-2014 Tax Year Material QTY Std Unit Certification Million BTU Million BTU Vegetative Biomass 01 (Seed Cill/Grease 1,257,289 WT 57,814,801 943,739 0,6 | Biomass | Oil Seed | No Activity | | <i>43,334,000</i> | 402,501 | 0.0000 | 5,250 | <i>40.33</i> |
| Vegetative Biomas Vegetative (Vegetative Biomass 6,333 (No Activity BDT \$63,327 102,654 16.2100 1,349 \$0.62 Wastewater Biosolid Woody Biomass No Activity St,033,005 1,805,535 17.4800 23,726 \$0.57 2014 BIOMASS TAX CREDITS Woody Biomass Woody Biomass St,153 WT \$2,584,987 312,920 0.6000 4,112 \$8.26 0i/Grease For Activity No Activity St,560 Gallons \$67,660 79,955 0.1182 1,051 \$0.85 Vegetative Biomass No Activity No Activity No Activity St,955 0.1182 1,051 \$0.85 Vegetative Biomass No Activity St,95,407 24,644 \$1.57 2010-2014 BIOMASS TAX CREDITS Yrad Debris No Activity St,96,230 1,875,407 24,644 \$1.57 2010-2014 BIOMASS TAX CREDITS Wastewater Biosolid No Activity St,97,417 \$1,482,532 | | Used Oil/Grease | , 3,410,855 | Gallons | \$341,086 | 403,061 | 0.1182 | 5,296 | \$0.85 |
| Wastewater Biosolid OU/Gresse No Activity Woody Biomass DU/Gresse No Activity Used OU/Gresse BDT S1,033,005 1,805,535 17.4800 23,726 \$0.57 2014 BIOMASS TAX CREDITS Used OU/Gresse Yoody DU/Gresse S1,233,005 1,805,535 17.4800 23,726 \$0.57 2014 Preliminary Used OU/Gresse Yoody DU/Gresse S21,534 WT \$2,584,987 312,920 0.6000 4,112 \$8.26 Used OU/Gresse Manure S21,534 WT \$2,584,987 312,920 0.6000 4,112 \$8.26 Used OU/Gresse Manure S21,534 WT \$2,584,987 312,920 0.6000 4,112 \$8.26 Used OU/Gresse Manure S21,534 WT \$2,584,987 312,920 0.6000 4,112 \$8.36 Vegetative Biomass No Activity Proveret ⁴ S0.20 Voody Yard Debris Yd Debris Debris Material QTY Std Unit Certification Amount | Vegetative Biomass | Vegetative Biomass | 6,333 | BDT | \$63,327 | 102,654 | 16.2100 | 1,349 | \$0.62 |
| Used Ol/Grease Manure Woody Biomass Yard Debris 103,291 BD1 \$1,033,005 1,805,535 17,4800 23,726 \$057 Voody Biomass Voody Biomass Used Ol/Grease \$4,792,083 2,713,811 35,661 \$1.77 2014 Preliminary Manure \$21,534 WT \$2,584,987 312,920 0.6000 4,112 \$8.26 Oil/Grease 0il/Grease 676,607 Gallons \$67,660 79,955 0.1182 1,051 \$0.85 Vegetative Biomass No Activity Woody Biomass 84,813 BDT \$293,583 1,482,532 17,4800 19,481 \$0.20 Voody Biomass 84,813 BDT \$293,583 1,482,532 17,4800 19,481 \$0.20 Voody Biomass 84,813 BDT \$293,583 1,482,532 17,4800 19,481 \$0.20 Voody Biomass 84,813 BDT \$293,583 1,482,532 17,4800 19,481 \$0.20 Voody Biomass 84,813 BDT <td></td> <td>Wastewater Biosolid</td> <td>No Activity</td> <td>88-</td> <td>64 000 005</td> <td>4 005 505</td> <td>47 4000</td> <td>22 726</td> <td>60.57</td> | | Wastewater Biosolid | No Activity | 88 - | 64 000 005 | 4 005 505 | 47 4000 | 22 726 | 60.57 |
| Oti/Grease Tail O boding Function of the problem S4,792,083 2,713,811 35,661 \$1.77 2014 BIOMASS TAX CREDITS Woody Ubred Oil/Grease Woody Ubred Oil/Grease S21,534 WT \$2,584,987 312,920 0.6000 4,112 \$8.26 Oil/Grease 0il/Grease 676,607 Gallons \$67,660 79,955 0.1182 1,051 \$0.85 Vegetative Biomass Woody Woody Biomass No Activity Wadewater Biosolid No Activity No longer Eligible \$2,946,230 1,875,407 24,644 \$1.57 2010-2014 Tax Year Marure 1,572,899 WT \$7,841,801 943,739 0.6000 12,401 \$8.31 Woody Biomass Vard Goll/Grease 1,259,682 Gallons \$57,171 6,142 0.1182 17.484 \$0.85 Vegetative Biomass OT 1,259,682 Gallons \$51,125,973 1,330,557 0.1182 17.484 \$0.85 Vegetative Biomass OT 12,203 BDT \$12,202 197,809 163 \$3.57 Woody Biomass 12,203 <td< td=""><td>Used</td><td>Woody Biomass</td><td>103,291</td><td>BDI</td><td>\$1,033,005</td><td>1,805,535</td><td>17.4800</td><td>23,726</td><td>\$0.57</td></td<> | Used | Woody Biomass | 103,291 | BDI | \$1,033,005 | 1,805,535 | 17.4800 | 23,726 | \$0.57 |
| ZO14 BIOMASS TAX CREDITS Used OI/Grease ZO14 Preliminary Manure OI/Grease S21,534 WT \$2,584,987 312,920 0.6000 4,112 \$8.26 Vigory USed OI/Grease 0 Seed Of 6,607 No Activity No Activity No Activity \$293,583 1,482,532 17.4800 19,481 \$0.20 Vegetative Biomass Vegetative Biomass No Activity No Activity No Activity \$293,583 1,482,532 17.4800 19,481 \$0.20 Varid Debris No longer Eligible \$293,583 1,482,532 17.4800 19,481 \$0.20 Z010-2014 Total \$2010-2014 Tax Year Material QTY \$td Unit Certification Amount Million BTU Households Powered** TC \$ Per Million BTU Manure Oil Seed 1,1259,682 Gallons \$57,171 6,142 0.1182 81 \$9.31 Used Oil/Grease 10/Grease 11,259,682 Gallons \$1,125,973 1,330,557 0.1182 17,484 \$0.85 Vegetative Biomass Used Oil/Grease 11,259,682 Gallons \$1,125,973 1,330,557 0.1 | Oil/Grease | 2013 Total | NO IONGEL EII | Binie | \$4.792.083 | 2.713.811 | | 35.661 | \$1.77 |
| 2014 BIOMASS TAX CREDITS Woody Biomass 2014 Preliminary Manure 521,534 WT \$2,584,987 312,920 0.6000 4,112 \$8.26 Oil Seed OII/Cresse G76,607 Gallons \$67,660 79,955 0.1182 1,051 \$0.85 Vegetative Biomass Woody Biomass No Activity No Activity No Activity No Activity \$0.9955 0.1182 17.4800 19,481 \$0.20 Vard Debris No longer Eligible 2014 Total \$2,946,230 1,875,407 24,644 \$1.57 Z010-2014 BIOMASS TAX CREDITS Yard Debris Yard Debris Material QTY Std Unit Certification Amount Million BTU Households Powered** TC \$ Per Million BTU Woody Biomass Yard 1,572,889 WT \$7,841,801 943,739 0.6000 12,401 \$8.31 Used Oil/Grease 11,259,682 Gallons \$57,171 6,142 0.1182 17,484 \$0.85 Vegetative Biomass GT 37,493 WT \$374,926 56,239 1.5000 739 \$6.67 Woody Biomass G1/Grease | | | | | + .,, | _,, | | , | |
| Manure 521,534 WT \$2,584,987 312,920 0.6000 4,112 \$8.26 Oil Seed No Activity Used Oil/Grease 676,607 Gallons \$67,660 79,955 0.1182 1,051 \$0.85 Vegetative Biomass No Activity No Activity No Activity No Activity Yard Debris No Activity No Activity 1,482,532 17.4800 19,481 \$0.20 Vard Debris No longer Eligible 52,946,230 1,875,407 24,644 \$1.57 Z010-2014 Total \$2,946,230 1,875,407 24,644 \$1.57 Manure 1,572,899 WT \$7,841,801 943,739 0.6000 12,401 \$8.31 Manure 1,572,899 WT \$7,841,801 943,739 0.6000 12,401 \$8.31 Manure 1,572,899 WT \$7,841,801 943,739 0.6000 12,401 \$8.31 Gil Seed 11,259,682 Gallons \$1,125,973 1,330,557 1.182 17,484 \$0.62 Vegetative Biomass 12,203 BDT \$3,197,350 <td>2014 BIOMASS TAX CREDITS</td> <td>2014 Preliminary</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> | 2014 BIOMASS TAX CREDITS | 2014 Preliminary | | | | | | | |
| Used Oil/Grease Oil Seed No Activity Sec7,660 79,955 0.1182 1,051 \$0.85 Vegetative Biomass Vard Debris No Activity No Activity No Activity No Activity No Activity Voody Biomass 84,813 BDT \$293,583 1,482,532 17.4800 19,481 \$0.20 Vard Debris No longer Eligible Z010-2014 Total Z010-2014 Tax Year Material QTY Std Unit Certification Amount Million BTU Mouseholds Powered** TC \$ Per Million BTU Voody Biomass Manure Oil Seed Namure 1,572,899 WT \$7,841,801 943,739 0.6000 12,401 \$8.31 Voody Biomass Oil Seed 1,143,420 Gallons \$57,171 6,142 0.1182 17.484 \$0.85 Vegetative Biomass 12,203 BDT \$122,029 197,809 16.2100 2,599 \$0.62 Voody Used Oil/Grease Biomass 01/Grease 17.459,682 Gallons \$1,125,973 1,330,557 0.1182 17.484 \$0.85 Vegetative Biomass GT 37,493 WT \$37,4926 56,239 1.5000 | Biomass | Manure | 521,534 | WT | \$2,584,987 | 312,920 | 0.6000 | 4,112 | \$8.26 |
| Outcode Ord, GOV Galionis 3, 507, 600 79, 533 0.1182 1, 051 30.83 Vegetative Biomass No Activity No Activity Voody 1,482,532 17.4800 19,481 \$0.20 Vard Debris No Activity No Activity No Activity No Activity 1,482,532 17.4800 19,481 \$0.20 2010-2014 BIOMASS TAX CREDITS Yard Debris No Activity No Activity Manure 1,572,899 WT \$7,841,801 943,739 0.6000 12,401 \$81 Manure 1,572,899 WT \$7,841,801 943,739 0.6000 12,401 \$831 Manure 1,572,899 WT \$7,841,801 943,739 0.6000 12,401 \$831 Manure 1,572,899 WT \$7,841,801 943,739 0.6000 12,401 \$8331 Used Oil/Grease 11,259,682 Gallons \$1,125,973 1,330,557 0.1182 17,484 \$0.85 Vegetative Biomass 12,203 BDT \$122,029 197,809 16.2100 2,599 \$0.62 | Used Oil/Grease | Oil Seed | No Activity | Callons | \$67.660 | | 0 1 1 9 2 | 1 051 | ¢0.9E |
| Vestewater Biosolid Wastewater Biosolid Woody Biomass No Activity No Longer Eligible Subscription Subscreduption Subscription | | Vegetative Biomass | No Activity | Galiolis | Ş07,000 | 79,900 | 0.1162 | 1,051 | ŞU.85 |
| Manure Woody Biomass Yard Debris 84,813 No longer Eligible BDT No longer Eligible \$293,583 1,482,532 17.4800 19,481 \$0.20 2010-2014 BIOMASS TAX CREDITS Yard Debris 2010-2014 Tax Year Material QTY Std Unit Certification Amount Million BTU Million BTU Households Powered** TC \$ Per Million BTU Voody Biomass GT Vard Debris Manure 1,572,899 WT \$7,841,801 943,739 0.6000 12,401 \$8.31 GT Used Oil/Grease 11,1259,682 Gallons \$57,171 6,142 0.1182 81 \$9.31 Used Oil/Grease Vegetative Biomass Woody Biomass Woody Biomass GT 37,493 WT \$12,209 197,809 16.2100 2,599 \$0.62 Vegetative Biomass GT 37,493 WT \$3,49,255 1.500 739 \$6.67 Woody Biomass GT 906,265 WT \$44,28 WT \$44,28 2.8871,242 9.788 116,573 \$1.00 Woody Biomass GT 906,265 WT \$44,28 WT \$44,28 | | Wastewater Biosolid | No Activity | | | | | | |
| Manure Yard Debris No longer Eligible 2014 Total \$2,946,230 1,875,407 24,644 \$1.57 2010-2014 BIOMASS TAX CREDITS Yard Debris Yard Debris Material QTY St Unit Certification Amount Million BTU Households Powered** TC \$ Per Million BTU Modey Debris Manure 1,572,899 WT \$7,841,801 943,739 0.6000 12,401 \$8.31 Manure 1,572,899 WT \$7,841,801 943,739 0.6000 12,401 \$8.31 Oil Seed 1,143,420 Gallons \$57,171 6,142 0.1182 81 \$9.31 Used Oil/Grease 11,259,682 Gallons \$1,125,973 1,330,557 0.1182 17,484 \$0.85 Vegetative Biomass GT 37,493 WT \$347,926 56,239 1.5000 739 \$6.67 Woody Biomass GT 906,265 WT \$8,890,288 8,871,242 9.788 116,573 \$1.00 Woody Biomass GT 906,265 WT \$8,890,288 | | Woody Biomass | 84,813 | BDT | \$293,583 | 1,482,532 | 17.4800 | 19,481 | \$0.20 |
| Z010-2014 BIOMASS TAX CREDITS Yard Debris Yard Debris Z010-2014 Tax Year Material QTY Std Unit Certification Amount Million BTU Mouseholds Powered** TC \$ Per Million BTU Woody Biomass Manure GT Manure Oil Seed 1,572,899 WT \$7,841,801 943,739 0.6000 12,401 \$8.31 Manure GT 0il Seed 1,143,420 Gallons \$57,171 6,142 0.1182 81 \$9.31 Used Oil/Grease 11,259,682 Gallons \$1,125,973 1,330,557 0.1182 17,484 \$0.650 Vegetative Biomass 12,203 BDT \$122,029 197,809 16.2100 2,599 \$0.62 Vegetative Biomass GT 37,493 WT \$344,284 12,400 2.8000 163 \$3.57 Woody Biomass GT 906,265 WT \$8,890,288 8,871,242 9.7888 116,573 \$1.00 Woody Biomass GT 906,265 WT \$340,658 415,059 6.0000 5,454 \$0.82 Woody Biomass GT 906,265 WT \$340,658 415,059 6.0000 5,454 \$0.82 <td>Manure</td> <td>Yard Debris</td> <td>No longer Eli</td> <td>gible</td> <td>•••••</td> <td></td> <td></td> <td></td> <td></td> | Manure | Yard Debris | No longer Eli | gible | ••••• | | | | |
| 2010-2014 BIOMASS TAX CREDITS Yard Debris Yard Debris Manure 1,572,899 WT \$7,841,801 943,739 0.6000 12,401 \$8.31 GT GT Gil Seed 1,143,420 Gallons \$57,171 6,142 0.1182 81 \$9.31 Used Oil/Grease 11,259,682 Gallons \$1,122,073 1,330,557 0.1182 17,484 \$0.600 2,599 \$0.600 2,599 \$0.600 2,599 \$0.600 2,599 \$0.600 2,599 \$0.620 \$0.600 2,599 \$0.600 2,599 \$0.620 <t< td=""><td></td><td>2014 Total</td><td></td><td></td><td>\$2,946,230</td><td>1,875,407</td><td></td><td>24,644</td><td>\$1.57</td></t<> | | 2014 Total | | | \$2,946,230 | 1,875,407 | | 24,644 | \$1.57 |
| Vard Debris 2010-2014 Tax Year Material QTY Std Unit Manure Amount BTU* per Unit BTU< per Unit Million BTU Manure GT 1,572,899 WT \$7,841,801 943,739 0.6000 12,401 \$8.31 Oil Seed Used Oil/Grease 1,143,420 Gallons \$57,171 6,142 0.1182 81 \$9.31 Used Oil/Grease 11,259,682 Gallons \$1,125,973 1,330,557 0.1182 17,484 \$0.652 Vegetative Biomass GT 37,493 WT \$374,926 56,239 1.5000 739 \$6.67 Wastewater Vegetative Biomass Wastewater Biosolid 4,428 WT \$44,284 12,400 2.8000 16.3 \$3.57 Woody Biomass GT 906,265 WT \$48,800,288 8,871,242 9.7888 116,573 \$1.00 Yord Debris 69,176 WT \$340,658 415,059 6.0000 5,454 \$0.82 Used Oil/Crease 69,176 WT \$340,658 415,059 6.0000 5,454 \$0.82 Woody Biomass GT 69,176 WT \$340,658 </td <td>2010-2014 BIOMASS TAX CREDITS</td> <td></td> <td></td> <td></td> <td>Certification</td> <td>Million</td> <td>Million</td> <td>Households</td> <td>TC \$ Per</td> | 2010-2014 BIOMASS TAX CREDITS | | | | Certification | Million | Million | Households | TC \$ Per |
| Woody Biomass Manure GT 1,572,899 WT \$7,841,801 943,739 0.6000 12,401 \$8.31 GT 0il Seed 1,143,420 Gallons \$57,171 6,142 0.1182 81 \$9.31 Used Oil/Grease 11,259,682 Gallons \$1,125,973 1,330,557 0.1182 17,484 \$0.85 Vegetative Biomass GT 37,493 WT \$374,926 56,239 1.5000 739 \$6.67 Wastewater Vegetative Biomass 0il/Grease 375,181 BDT \$3,197,350 6,558,157 17.4800 86,178 \$0.49 Woody Biomass GT 906,265 WT \$8,890,288 8,871,242 9.7888 116,573 \$1.00 Yard Debris 69,176 WT \$340,658 415,059 6.0000 5,454 \$0.82 2010-2014 Tax Year \$21,994,480 18,391,344 241,673 \$1.20 | Yard Debris | 2010-2014 Tax Year | Material QTY | Std Unit | Amount | BTU* | BTU | Powered** | Million |
| Biomass Manure 1,372,033 W1 57,041,001 543,753 0.0000 12,411 \$0.51 GT Oil Seed 1,143,420 Gallons \$57,171 6,142 0.1182 81 \$9.31 Used Oil/Grease 11,259,682 Gallons \$1,125,973 1,330,557 0.1182 17,484 \$0.85 Vegetative Biomass 12,203 BDT \$122,029 197,809 16.2100 2,599 \$0.62 Vegetative Biomass GT 37,493 WT \$374,926 56,239 1.5000 739 \$6.67 Wastewater Biosolid 4,428 WT \$44,284 12,400 2.8000 163 \$3.57 Woody Biomass 375,181 BDT \$3,197,350 6,558,157 17.4800 86,178 \$0.49 Woody Biomass GT 906,265 WT \$8,890,288 8,871,242 9.7888 116,573 \$1.00 Yard Debris 69,176 WT \$340,658 415,059 6.0000 5,454 \$0.82 2010-2014 Tax Year \$21,994,480 18,391,344 241,673 \$1.20 | Woody | Manure | 1 572 899 | W/T | \$7 841 801 | 9/13 739 | 0 6000 | 12 401 | бю \$8.31 |
| Used Oil/Grease 11,259,682 Gallons \$1,125,973 1,330,557 0.1182 17,484 \$0.85 Vegetative Biomass 12,203 BDT \$122,029 197,809 16.2100 2,599 \$0.62 Vegetative Biomass 12,203 BDT \$122,029 197,809 16.2100 2,599 \$0.62 Vegetative Biomass GT 37,493 WT \$374,926 56,239 1.5000 739 \$6.67 Wastewater Biosolid 4,428 WT \$44,284 12,400 2.8000 163 \$3.57 Woody Biomass 375,181 BDT \$3,197,350 6,558,157 17.4800 86,178 \$0.49 Woody Biomass GT 906,265 WT \$8,890,288 8,871,242 9.7888 116,573 \$1.00 Yard Debris 69,176 WT \$340,658 415,059 6.0000 5,454 \$0.82 2010-2014 Tax Year \$21,994,480 18,391,344 241,673 \$1.20 | GTManure | Oil Seed | 1,143,420 | Gallons | \$57,171 | 6,142 | 0.1182 | 81 | \$9.31 |
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| Woody Wastewater Negetative Vegetative Negetative | | Vegetative Biomass GT | 37,493 | WT | \$374,926 | 56,239 | 1.5000 | 739 | \$6.67 |
| Woody Biomass Wastewater Biomass Vegetative Biomass Vegetative B | Oil Seed | Wastewater Biosolid | 4,428 | WT | \$44,284 \$3 107 250 | 12,400 | 2.8000 | 163 86 179 | \$3.57 \$0.40 |
| Woody Biomass Wastewater Vegetative Biomass Vegetative Biomass </td <td>Used Oil/Grease</td> <td>Woody Biomass GT</td> <td>906 265</td> <td>W/T</td> <td>\$8,890,288 \$8,890,288</td> <td>0,550,15/ 8,871 747</td> <td>9,7888</td> <td>00,178 116 573</td> <td>\$0.49 \$1.00</td> | Used Oil/Grease | Woody Biomass GT | 906 265 | W/T | \$8,890,288 \$8,890,288 | 0,550,15/ 8,871 747 | 9,7888 | 00,178 116 573 | \$0.49 \$1.00 |
| Biomass Biomass 2010-2014 Tax Year \$21,994,480 18,391,344 241,673 \$1.20 | Woody Wastewater Vegetative Vegetative | Yard Debris | 69,176 | WT | \$340,658 | 415,059 | 6.0000 | 5,454 | \$0.82 |
| | Biosolid Biomass GT Biomass | 2010-2014 Tax Year | | | \$21,994,480 | 18,391,344 | | 241,673 | \$1.20 |

MillionBTU* The energy saved, created or displaced is a calculation based on industry standard conversion rates by feed stock in million BTU. Households Powered** Average household energy usage in the region is sourced from USDOE and is currently 76.1 million BTU per year.

Section-By-Section Summary of HB 2449A

(All references to sections apply to the A-Engrossed bill)

Bioenergy Pilot Program

The pilot program would provide an incentive for each unit of energy production. The pilot program would be implemented through performance agreements between the state and participating bioenergy facilities.

Section 8 authorizes the tax incentive and directs the department to enter into performance agreements with facilities to establish the terms and conditions under which a credit will be provided.

Providing the incentive through a performance agreement will provide certainty to the bioenergy facility. The state can precisely manage the revenue impact of the pilot program using this approach. Under the pilot program, an incentive would be provided for each unit of energy that is produced up to the amount specified in the performance agreement.

The term of a performance agreement could be up to six years, but would not extend beyond tax years that begin in 2021. The incentive rate would be negotiated with each individual facility and would be based on the production costs, including biomass production and collection costs and the value of the energy produced. The criteria for determining the incentive level are provided in Section 11. This section includes a provision that allows the department to enter into a performance agreement directly with a special district such as a port that owns or operates an existing bioenergy facility.

Section 9 and 10 allows the recipient to transfer the tax credit with the same requirements as the current program.

Section 11 contains the goals of the pilot program and the criteria for selecting projects and determining incentive levels.

The goals target three specific types of bioenergy production:

- 1) Electrical energy production that utilizes woody biomass derived from forest health improvement projects;
- 2) Electricity or transportation fuel production from biogas that utilizes animal manure, waste fats, oils or grease, food processing residues or food wastes from residential, commercial or institutional sources; and
- 3) Thermal energy production for space heating from woody biomass, such as the biomass boilers installed in some rural schools.

Since the pilot program is capped, the department would work with stakeholders to establish a process for selecting projects. Similar projects would be evaluated against each other and not against different types of technologies. Woody biomass projects would only be evaluated against other woody biomass projects and anaerobic digester projects would only compete against other anaerobic digester projects.

Existing facilities and suppliers would be able to continue participation in the current program, but not both. The department would monitor and ensure that biomass does not receive an incentive twice.

The department would evaluate and select projects based on their contribution to Oregon using the criteria included in this section. These criteria are:

- Amount of energy production
 - This criterion will evaluate the incentive per unit of energy to both determine the energy return on the state's investment and ensure that the projects selected would fit within the targets of the pilot.
- Contribution to state energy, natural resource, materials management, and water management goals.
 - This criterion will evaluate the non-energy values that are realized from the project.
 Examples include the contribution of the project to supporting fire risk reduction treatments on forests and assisting Oregon's dairy industry manage on-farm nutrients.
- Conversion efficiency
 - This criterion will evaluate the energy performance of a system.
- Geographic location
 - Preference will be provided to facilities that would be developed in parts of the state with little or no existing markets for biomass to provide those local benefits and avoid impacting existing markets.
- Jobs created or sustained
 - The contribution of the system to strengthen and retain existing jobs and the number of new jobs created by the project.
- Reduction in greenhouse gas or other air emissions
 - This is a quantitative criterion that evaluates the relative reductions in greenhouse gases or other air pollutants resulting from the project.
- Technology-specific energy production standards
 - This criterion would set minimum requirements for specific technologies. The purpose is to ensure that high-performance projects are supported.
- Facility status as a new facility, a facility with expanded energy production capacity or a restarted or repowered facility
 - Preference in awarding performance agreements under the pilot would be toward new, restarted or expanded projects.

This section also provides criteria for determining the specific incentive level. The incentive level would be based on the difference between the cost to produce the energy and the monetary value of that energy. For example, if a facility can produce a megawatt hour for \$85, but the current price paid for that power is \$45, an incentive will be structured to fill that gap.

Section 12 describes how the pilot program should be allocated amongst the different technologies.

The department estimates that up to 15 average megawatts of electricity from woody biomass, 3-5 anaerobic digestion projects, and a similar number of biomass thermal systems at schools and other facilities could be supported under the limits provided in this section, given the budget provided in Section 13. These estimates are included as technology-specific limits in this section to ensure that the pilot program is allocated across all three areas.

Section 13 provides a cap for the pilot program.

The pilot program has a cap of \$15 million each biennium through tax year 2021.

Section 14 directs the department to evaluate and report on the effectiveness of program to the legislature.

The department would evaluate the effectiveness of the pilot program. The effectiveness of the production-based incentive would be compared to the existing biomass tax credit program and renewable energy development grants administered by the department. This evaluation would be presented to the legislature each odd numbered year.

Improvements to the Existing Biomass Producer or Collector Tax Credit Program

In addition to the establishment of a production-based incentive pilot, House Bill 2449A would align the definition of biomass with other Oregon statutes, extend the Biomass Producer or Collector tax credit through 2021, add new eligible biomass and updated credit rates, and provide a mechanism for the department to monitor and respond to changing market conditions.

Section 2 contains the definitions for the Biomass Producer or Collector tax credit and the bioenergy pilot program.

The current program is codified in two different statutes. The definition of biomass included in one statute (ORS 315.141) does not exactly align with the list of biomass that is eligible for a tax credit contained in the other statute (ORS 469B.403). This section aligns the definitions, includes new definitions such as one for food processing residues, and includes the definition of woody biomass that is used in other Oregon statutes.

Section 3 authorizes the Biomass Producer or Collector tax credit and provides updates to who is eligible for the credit along with administrative and structural updates to this part of ORS 315.141.

This section would allow non-taxpayers such as ports, municipalities, tribal entities and non-profits to be eligible for the credit. This section also contains language to ensure that material or activities that received an incentive under the new production tax credit pilot program do not receive a tax credit under this section.

The rulemaking authority is consolidated into one section and made consistent with rulemaking authority provided to the department for other energy incentives. Additional language is included to ensure the department has authority to verify and determine eligibility of biomass, biomass production and collection, and biofuel production. The language authorizing the department to collect fees for the Biomass Producer or Collector tax credit program has been adjusted to align with the authority contained in other tax credit programs. These changes align this tax credit program with the authority provided for other incentives authorized under ORS 469B for Energy Conservation Projects, Transportation Projects and Renewable Energy Production Systems.

Additional rulemaking establishing a mechanism and limitations on adjustments to the credit rates is included in section 6.

Section 4 extends the sunset for the Biomass Producer or Collector tax credit through tax year 2021.

The current program is scheduled to sunset at the end of the 2017 tax year. This extension authorizes the tax credit for an additional four years. This would provide certainty for current participants and allows time to develop, administer and evaluate the production based incentive pilot program authorized in section 8. The extended sunset date is aligned with the proposed extended sunset dates for other energy incentive programs administered by the department.

Section 5 updates the transfer provision to recognize that a non-taxpayer may earn the credit.

Section 6 modifies the eligible types of biomass and credit rates and provides a mechanism to adjust the credit rates to reflect changes in market conditions.

The specific proposed changes to the credits are as follows:

- The credit rates for waste grease and used oil would be separated. The credit rate for waste grease would remain at \$0.10 per gallon and the credit rate for used oil would be reduced to \$0.05 per gallon.
- A credit rate would be added for food processing residues and for food waste from residential, commercial and institutional sources. Both credit rates would be set at \$5 per wet ton.
- The rate for animal manure would be reduced from \$5.00 to \$3.50 per wet ton.
- The credit rate for offal or tallow would be listed separate from animal manure. The credit rate would be unchanged at \$5 per wet ton.

This section also provides the department with limited authority to adjust the credit rates through rule. This authority is included to allow the credit rates to be adjusted to reflect changes in market conditions, technology or other factors that increase or decrease costs to produce or collect biomass. By rule, the credit rate may be adjusted up or down within the following parameters:

- A credit rate may only be adjusted once in any calendar year.
 - This ensures that there are not multiple changes to a credit rate in a short period of time providing consistency for participating firms.
- The credit rate for animal manure cannot be adjusted through rulemaking.
 - The adjustments made through this bill are held constant and not subject to adjustment, up or down, in future years.
- Adjustments cannot exceed 25 percent of the existing credit rate.
 - This ensures that there will not be drastic fluctuations in a credit rate from year to year.
- Changes to tax credit rates go into effect the tax year following the year in which the credit rate was adjusted.
 - This provides time for participants to adjust to a new credit rate before it goes into effect.
- Any changes to credit rates apply only to tax years 2017 and beyond
 - The changes made by House Bill 2449A would go into effect for tax years 2016; this provisions ensures that any adjustments would only be apply to tax years 2017 and beyond.

- The department must take market conditions into considerations when adjusting a rate. These market conditions include processing and transportation costs, technology advancements and alternative uses for the biomass.
 - This provision grounds credit rate determinations in the specific costs that this tax credit is designed to address and allows participants to understand the factors that will be considered. This provides additional transparency into the process that will be used.



Biomass Producer or Collector Tax Credit Timeline



Total ODOE cost for administering BPC program from 2010-2014: \$529,896

Tax credits certified from 2010-2014: **\$19,585,372**

Current program and past rulemaking activity.
 Proposed HB 2449 changes.

Appendix 6





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April 16, 2015

- To: House Committee on Revenue
- From: Andy Ginsburg, Assistant Director

Subject: House Bill 2449 A Engrossed – Tax Credit Committee Tax Questions

Thank you for the opportunity to provide information about the Oregon Department of Energy's (ODOE) Biomass Producer or Collector Tax Credit Program. Below are responses to the Tax Credit Committee Policy Questions.

1. What is the public policy purpose of this credit? Is there an expected timeline for achieving this goal?

The Biomass Producer or Collector Tax Credit was originally adopted as part of a broad biofuels package intended to reduce Oregon's dependence on foreign oil, stimulate markets and reduce greenhouse gas emissions. Its effect has been to divert biomass from the waste stream, using it instead to produce renewable energy. The public purpose of the Bioenergy Production Pilot proposed in HB 2449 A is to incent new or expanded in-state bioenergy production facilities. Both programs also provide various non-energy benefits, such as supporting forest health treatments, nutrient management on dairy farms, and providing alternatives to non-value added disposal techniques.

By offering an incentive for the use of biomass to create renewable electricity, transportation fuels and thermal energy, the existing program encourages value-added utilization of material that would otherwise be disposed of through burning, landfilling, flushing down the drain, or other traditional management techniques. This feedstock-based incentive makes it financially feasible to produce, collect, process, and transport biomass to energy production facilities from its origin in Oregon's forests, agricultural fields, and urban areas. The proposed pilot would make it financially feasible to build new energy facilities and reopen idled facilities. In exchange, the state benefits from the production of renewable energy, support for a skilled workforce, lowered greenhouse gas emissions, and markets for material generated from forest health treatments, agricultural operations and various waste streams.

As shown in Attachment 1, the existing bioenergy incentive programs support a range of different biomass feedstocks, technologies and types of energy production. Each of these feedstocks, technologies and production types has different markets and costs structures that affect what level of incentive is needed and how long the incentive will be needed to achieve the goals. For some feedstocks, such as woody biomass, incentives may be needed long-term to achieve forest health and air quality benefits due to the high collection costs compared to energy values. In other cases, incentives may only be needed through an initial payback period. For example, the market for used cooking oil has matured since the inception of the existing biomass tax credit program, reducing the need for incentives on a continual basis for this particular feedstock.

Under the proposed pilot program, the exact conditions and term of the incentive would be established in a site-specific performance agreement. These agreements will not extend beyond the six-year duration of the pilot program. This limitation will enable the state to determine the effectiveness of a production-based incentive.

House Bill 2449 A responds to the recommendation in Oregon's Ten-Year Energy Action Plan to refocus existing bioenergy incentives to support capital investment. The plan proposes to shift incentives from collection and production of fuel to investments in facilities such as institutional boilers, cogeneration facilities and biofuel production. House Bill 2449 A is consistent with these recommendations and the *Critical Path for Bioenergy Development* in Oregon's Ten-Year Energy Action Plan.

2. Who (groups of individuals, types of organizations or businesses) directly benefits from this credit? Does this credit target a specific group? If so, is it effectively reaching this group?

Oregon businesses that produce or collect biomass for energy production directly benefit from using the current tax credit. Bioenergy facilities benefit from reduced biomass feedstock costs. The current tax credit is targeted to agricultural producers and biomass collectors. These groups include dairy farmers, forest treatment and logging contractors, transportation companies, anaerobic digester operators, food producers and processors, and municipal wastewater treatment plant operators. Attachment 2 provides a program summary indicating the amount of tax credit issued for each feedstock sector from 2010 to 2013. This attachment illustrates the benefits received by each industry sector that participates in the current tax credit program.

The pilot program would be a targeted incentive directed to bioenergy producers. The incentive would be focused and awarded on actual energy production rather than the amount of feedstock used. The suppliers of biomass feedstock are expected to benefit from increased prices for the biomass they supply to participating facilities. The pilot program would support:

- Energy production or co-generation facilities that produce electrical energy from woody biomass derived from forest health treatment projects (up to 15 average MW)
- Schools, institutions or other facilities that use thermal energy production for space heating from woody biomass (up to 100,000 therms)
- Biodiesel refineries or ethanol production facilities that produce transportation fuels, or anaerobic digestion facilities that produce energy from animal manure, fats, oils or grease, food processing residues, or food wastes from residential, commercial or institutional sources. (up to 650 million cubic feet of biogas)

3. What is expected to happen if this credit fully sunsets? Could adequate results be achieved with a scaled down version of the credit? What would be the effect of reducing the credit by 50%?

If the program sunsets, the amount of biomass that is used for energy production in Oregon would decline. For instance, woody biomass material could be open-burned and other types of materials could be sent to a landfill, thus not utilizing their energy potential and contributing to non-desirable outcomes such as increased greenhouse gas emissions.

If the tax credit for some of the eligible types of biomass were reduced, there would be a decline in the utilization of these feedstocks, while the utilization of other feedstocks would likely be unchanged. Here are two examples:

- In 2012, the credit rate for woody biomass was reduced in value by approximately 50 percent. This reduction in the incentive level, along with other market factors, contributed to a reduction of biomass utilization from an average of 253,754 dry tons in 2010 and 2011 to 125,060 dry tons in 2012, 2013 and 2014.
- House Bill 2449 A proposes a reduction in the tax credit rate for used oil by 50 percent. This
 reduction is not expected to result in a decline of used oil for biofuel production. This is
 because the market for that type of biomass is maturing as evidenced by increasing
 geographic reach of Oregon-based biofuel manufacturers and the establishment of longterm purchase contracts. Sequential-Pacific Biofuels in Oregon, for instance, has entered
 into agreements with used oil providers in Seattle.

The effect of scaling down the tax credit would be specific to each type of feedstock; therefore HB 2449 A proposes to make targeted credit rate reductions in statute and provide limited authority for the department to make future adjustments to the credit rates by rule to ensure alignment with market conditions.

4. What background information on the effectiveness of this type of credit is available from other states?

Oregon is the only state that provides a comprehensive tax credit for biomass production or collection. Since programs in other states are not structured the same as Oregon's program, a direct comparison is not available. Examples from others states include:

- Washington offers a reduced Business and Occupation tax rate for manufactured woody biomass fuel,
- Wisconsin offers a tax credit for the purchase of equipment used to harvest woody biomass, and
- New Mexico offers a tax credit for agricultural biomass from a dairy or feedlot that is used to produce bioenergy.

The department has evaluated the impact of the tax credit on Oregon's wood fuels market and economy. The results of this study found that the tax credit supported between 30 and 70 jobs, between \$1.4 and \$3.29 million in wages and benefits, and between \$5 and \$11.8 million in economic activity. These benefits accrued from a net tax expenditure between \$3.27 and \$3.59 million.¹

¹ White E., N.-P. M. (2013). *Impacts of the Biomass Producer or Collector Tax Credit on Oregon's Wood Fuels Market and Economy.* Eugene, OR: Ecosystem Workforce Program, Institute for a Sustainable Environment, University of Oregon.

5. Is use of a tax credit an effective and efficient way to achieve this policy goal? What are the administrative and compliance costs associated with this credit? Would a direct appropriation achieve the goal of this credit more efficiently?

The Biomass Producer or Collector tax credit has proven to be effective at encouraging additional biomass production and collection. Stakeholders indicate that the effectiveness of the program could be enhanced by providing certainty. House Bill 2449 A provides the certainty needed to plan business expansions through the proposed pilot program and by extending the current program to coincide with the duration of the pilot.

The proposed pilot program would be targeted to encourage expanded bioenergy production. The pilot would be structured to address the short run differential between the cost to produce energy, including biomass fuel production and collection costs, and the value of the energy produced. The incentive would be designed to overcome the difference between the cost to produce and the value of the energy for a set period of time until costs for production decline or market prices for energy rise.

The administrative and compliance costs associated with this credit result from certifying the tax credits. The department's approximate costs for administering the BPC tax credit program in 2014 were \$167,070. This program is funded through application fees. The current fee for each application is \$100 plus 2.5% of the requested tax credit amount.

Compared to a direct appropriation, the current tax credit program is less efficient due to the need for many participants to monetize the credit by transferring it to an entity with a tax liability. The history of the program indicates that the majority of the certified tax credits are transferred. Reasons for this include the fact that some small businesses that earn the credit choose to enhance their cash flow, or tax credit recipients may not have the tax liability necessary to fully benefit from the credit themselves. The existing transfer provision addresses these scenarios. However, the transfer costs may be up to 10 percent of the face value of the credit.

In addition to the discounted value if there is a transfer, there are application fees for certifying the credit and transaction costs to arrange for a transfer. There is also a delay between the times the expense associated with the eligible activity is incurred and when the tax credit can be received and monetized. The pilot program contains a similar transfer provision, but the target facilities would likely benefit more directly from the tax credit than current participants. In either case, a direct appropriation would provide more immediate benefit to the participants.

6. What other incentives (including state or local subsides, federal tax expenditures or subsidies) are available that attempt to achieve a similar policy goal?

The Federal Biomass Crop Assistance Program (BCAP) is the only program that targets the same outcomes. However, BCAP is limited in the types of biomass that it can support. For example, current federal rules indicate a BCAP matching payment can only be made for woody biomass that results from certain type of forest treatments. The program matches the payments made by the purchasing facility at a rate of \$1 per ton up to \$20 per dry ton. For example, if the purchasing facility pays \$22 per dry ton, the matching payment would be \$20. Matching payments made to eligible material owners are also limited to a maximum of two years. This federal matching payment is in addition to the biomass tax credit. Information on the Biomass Crop Assistance Program is available at: https://www.fsa.usda.gov/FSA/webapp?area=home&subject=ener&topic=bcap.

Incentives such as the Oregon Department of Energy's Renewable Energy Development (RED) Grant or a combined heat and power project under the Energy Conservation Tax Credit could be made to a facility that receives material eligible for a tax credit under the biomass incentive program. This is not duplicative as the incentives address different aspects of project operations. The RED grant or conservation tax credit provides for the capital costs associated with developing a project while the biomass incentives address the ongoing fuel and operational costs. A project may also be eligible for incentives from the Energy Trust of Oregon depending on its location and the end user of any electricity it would generate.

These state and federal incentives would also not be duplicative under the proposed pilot program. Projects participating in the pilot program would be evaluated with any state or federal incentives that would be available. The result would be to reduce the incentive provided under the pilot by an equivalent amount.

7. Could this credit be modified to make it more effective and/or efficient? If so, how?

A number of items would improve the effectiveness of the current biomass tax credit. House Bill 2449 A proposes to make these improvements while piloting a production-based incentive. The improvements to the current program include:

- Aligning the definition of eligible biomass with the types of biomass authorized for a tax credit;
- Expanding eligibility to food processing residues and post-consumer food waste;
- Reducing the credit rates for animal manure and used oil;
- Providing the department with limited rulemaking authority to decrease or increase incentive levels to match market conditions beginning in 2017. To meet stakeholders' needs for stability and predictability, changes to credit rates could not exceed 25% in any year, could only occur once per year effective the following tax year, and would be required to reflect changes in market conditions and biomass production or collection cost structures; and
- Allowing non-taxpayers such as special districts, non-profits and municipalities to earn the credit directly.

The proposed pilot program would provide a production-based incentive for bioenergy facilities. The department expects that this will more effectively encourage new and expanded development of bioenergy facilities. This is because the incentive under the pilot will be targeted to production facilities and customized to each participating facility. The incentive level would be set to encourage the development of new or expanded production by matching the incentive level to the gap between the short-run cost of energy production and the market value of that energy. HB 2449 A would require the department to report each biennium on the effectiveness of the pilot compared to the existing program so that the Legislature can evaluate future changes to these incentives.



Attachment 1: Biomass Definitions and list of Biomass eligible for a tax credit

| ORS 315.141(1)(d) Biomass Definition | Material | ORS 469B.403 Tax Credit Rates | HB 2449 A Proposed Changes |
|--|---------------------------------|--|--|
| (A) Forest or rangeland woody debris from harvesting or thinning conducted to improve forest or rangeland ecological health and reduce uncharacteristic stand replacing wildfire risk; (B) Wood material from | Woody debris | (6) For woody biomass collected from nursery, orchard, agricultural, forest or rangeland property in Oregon, including but not limited to pruning, thinning, plantation rotations, log landing or slash resulting from harvest or forest | Use definition that is in forestry statutes (ORS 526). |
| hardwood timber described in ORS 321.267 (3); | Wood material | health stewardship, \$10.00 per bone dry ton. | |
| | | (2) For grain crops, including but not limited to wheat, barley and triticale, \$0.90 per bushel. | Include both primary residues like straw and food processing residues as distinct types of biomass. |
| (C) Agricultural residues; | Agricultural residues | (7) For grass, wheat, straw or other vegetative biomass from agricultural crops, \$10.00 per bone dry ton. | Provide food processing residues a credit rate of \$5 per wet ton |
| | | (8) For animal manure, \$5.00 per wet ton. | solids |
| (D) Offal and tallow from animal | Offal from animal rendering | (8) For rendering offal, \$5.00 per wet ton. | Add tallow and list senarate from animal manure |
| rendering; | Tallow from animal rendering | No Tax Credit Rate in Statute | |
| (E) Food wastes collected as provided under ORS chapter 459 or 459A; | Food wastes | (4) For used cooking oil or waste grease, \$0.10 per gallon. | Include used cooking oil or waste grease in the definition of biomass. List used oil and waste grease separately. Provide a distinct category for food waste. Adjust credit rate for used oil to \$0.05 per gallon, provide credit rate for waste grease of \$0.10 per gallon. Provide a tax credit for food waste from residential, |
| (F) Wood debris collected as provided under ORS chapter 459 or 459A | Wood debris | (6) For woody biomass collected from nursery, orchard, agricultural, forest or rangeland property in Oregon, including but not limited to pruning, thinning, plantation rotations, log landing or slash resulting from harvest or forest health stewardship, \$10.00 per bone dry ton. | |
| (G) Wastewater solids; or | Wastewater solids | (5) For wastewater biosolids, \$10.00 per wet ton. | |
| (H) Crops grown solely to be used for energy. | Crops for energy | (1) For oilseed crops, \$0.05 per pound. (3) For virgin oil or alcohol delivered for production in Oregon from Oregon-based feedstock, \$0.10 per gallon. | |

Attachment 2: Biomass Producer or Collector Tax Credit Summary data as of 4/1/2015

| 2010 BIOMASS TAX CREDITS Used Vegetative Biomass GT 2011 BIOMASS TAX CREDITS Vard Debris GT 2012 BIOMASS TAX CREDITS Vard Vegetative Biomass GT 2012 BIOMASS TAX CREDITS Vegetative Biomass GT 2013 BIOMASS TAX CREDITS Vegetative Biomass 2013 BIOMASS TAX CREDITS Vegetative Biomass 2014 BIOMASS TAX CREDITS Voody Biomass Coll/Grease Coll/ | 2010 Manure Oil Seed Used Oil/Grease Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Yard Debris 2010 Total Oil Seed Used Oil/Grease Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Yard Debris 2011 Total 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass GT Yard Debris 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Yard Debris | 91,569 314,260 1,526,759 12,606 1,590 480,015 33,660 2,856,970 24,887 2,839 426,250 35,516 147,190 No Activity 2,788,491 5,870 | WT Gallons Gallons WT WT WT Gallons Gallons Gallons Gallons WT WT WT WT | \$457,843 \$15,713 \$152,676 \$126,057 \$15,897 \$4,834,190 \$168,296 \$5,770,671 \$41,458 \$285,697 \$248,869 \$28,388 \$4,056,098 \$172,363 \$5,541,231 | 54,941 1,688 180,417 18,909 4,451 4,698,767 201,961 5,161,133 85,003 4,454 337,608 37,330 7,949 4,172,476 213,098 4,857,918 | 0.6000 0.1182 1.5000 2.8000 9.7888 6.0000 0.1182 0.01182 1.5000 2.8000 9.7888 6.0000 | 722 22 2,371 248 58 61,745 2,654 67,820 1,117 59 4,436 491 104 54,829 2,800 63,836 | \$8.33 \$9.31 \$0.85 \$6.67 \$3.57 \$1.03 \$0.83 \$1.12 \$8.33 \$9.31 \$0.85 \$6.67 \$3.57 \$0.85 \$6.67 \$3.57 \$0.97 \$0.81 \$1.14 |
|---|---|--|--|---|--|---|---|--|
| Vard Debris GT 2011 BIOMASS TAX CREDITS Vegetative Biomass GT 2012 BIOMASS TAX CREDITS 2012 BIOMASS TAX CREDITS Vegetative Biomass GT 2013 BIOMASS TAX CREDITS Vegetative Biomass GT 2013 BIOMASS TAX CREDITS Vegetative Biomass 2013 BIOMASS TAX CREDITS Vegetative Biomass Used Oil/Grease 2014 BIOMASS TAX CREDITS | 2010 Manure Oil Seed Used Oil/Grease Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Yard Debris 2010 Total 2011 Manure Oil Seed Used Oil/Grease Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Yard Debris 2011 Manure Oil Seed Used Oil/Grease Vegetative Biomass GT Yard Debris 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Yard Debris | 91,569 314,260 1,526,759 12,606 1,590 480,015 33,660 | WT Gallons Gallons WT WT WT Gallons Gallons WT WT WT WT WT WT | \$457,843 \$15,713 \$152,676 \$126,057 \$15,897 \$4,834,190 \$168,296 \$5,770,671 \$41,458 \$285,697 \$248,869 \$28,388 \$4,056,098 \$172,363 \$5,541,231 | 54,941 1,688 180,417 18,909 4,451 4,698,767 201,961 5,161,133 85,003 4,454 337,608 37,300 7,949 4,172,476 213,098 4,857,918 | 0.6000 0.1182 1.5000 2.8000 9.7888 6.0000 0.1182 0.01182 1.5000 9.7888 6.0000 | 722 22 2,371 248 58 61,745 2,654 67,820 1,117 59 4,436 491 104 54,829 2,800 63,836 | \$8.33 \$9.31 \$0.85 \$6.67 \$3.57 \$1.03 \$0.83 \$1.12 \$8.33 \$9.31 \$0.85 \$6.67 \$3.57 \$0.97 \$0.81 \$1.14 |
| Vegetative Biomass GT 2011 BIOMASS TAX CREDITS Vegetative Biomass GT 2012 BIOMASS TAX CREDITS 2012 BIOMASS TAX CREDITS Vegetative Biomass GT 2013 BIOMASS TAX CREDITS Vegetative Biomass COULS CREDITS Vegetative COULS CREDITS Vegetative COULS CREDITS Vegetative Biomass COULS CREDITS Vegetative COULS CREDITS VEGETATIONASS TAX CREDITS VEGETATIONASS TAX CREDITS VEGETATIONASS TAX CREDITS | Manure Oil Seed Used Oil/Grease Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Yard Debris 2010 Total 2011 Manure Oil Seed Used Oil/Grease Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Yard Debris 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Wastewater Biosolid Woody Biomass Wastewater Biosolid Woody Biomass | 31,303 314,260 1,526,759 12,606 1,590 480,015 33,660 2,856,970 24,887 2,839 426,250 35,516 147,190 No Activity 2,788,491 5,870 | Gallons Gallons WT WT WT WT Gallons Gallons Gallons WT WT WT WT WT | \$15,713 \$152,676 \$126,057 \$15,897 \$4,834,190 \$168,296 \$5,770,671 \$708,357 \$41,458 \$285,697 \$248,869 \$28,388 \$4,056,098 \$172,363 \$5,541,231 | 1,688 180,417 18,909 4,451 4,698,767 201,961 5,161,133 85,003 4,454 337,608 37,330 7,949 4,172,476 213,098 4,857,918 | 0.1182 0.1182 1.5000 2.8000 9.7888 6.0000 0.1182 0.1182 1.5000 9.7888 6.0000 | 22 2,371 248 58 61,745 2,654 67,820 1,117 59 4,436 491 104 54,829 2,800 63,836 | \$8.33 \$9.31 \$0.85 \$6.67 \$3.57 \$1.03 \$0.83 \$1.12 \$8.33 \$9.31 \$0.85 \$6.67 \$3.57 \$0.85 \$6.67 \$3.57 \$0.81 \$1.14 |
| Biomass GT 2011 BIOMASS TAX CREDITS 2011 BIOMASS TAX CREDITS Vegetative Biomass GT 2012 BIOMASS TAX CREDITS 2012 BIOMASS TAX CREDITS Vegetative Biomass 2013 BIOMASS TAX CREDITS Vegetative Biomass 2013 BIOMASS TAX CREDITS Vegetative Biomass 2013 BIOMASS TAX CREDITS Vegetative Biomass 2014 BIOMASS TAX CREDITS Vegetative Biomass 2014 BIOMASS TAX CREDITS Vegetative Biomass 2014 BIOMASS TAX CREDITS | Used Oil/Grease Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Yard Debris 2010 Total 2011 Manure Oil Seed Used Oil/Grease Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Yard Debris 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Wastewater Biosolid Woody Biomass Wastewater Biosolid Woody Biomass | 1,526,759 1,526,759 12,606 1,590 480,015 33,660 141,671 829,160 2,856,970 2,839 426,250 35,516 147,190 No Activity 2,788,491 5,870 No Activity | Gallons Gallons WT WT WT Gallons Gallons Gallons WT WT WT WT WT | \$12,576 \$12,676 \$12,6057 \$15,897 \$4,834,190 \$168,296 \$5,770,671 \$41,458 \$285,697 \$248,869 \$28,388 \$4,056,098 \$172,363 \$5,541,231 | 180,417 180,417 18,909 4,451 4,698,767 201,961 5,161,133 85,003 4,454 337,608 37,330 7,949 4,172,476 213,098 4,857,918 | 0.1182 0.1182 1.5000 9.7888 6.0000 0.6000 0.1182 0.1182 1.5000 9.7888 6.0000 | 2,371 248 58 61,745 2,654 67,820 1,117 59 4,436 491 104 54,829 2,800 63,836 | \$0.85 \$6.67 \$3.57 \$1.03 \$0.83 \$1.12 \$8.33 \$9.31 \$0.85 \$6.67 \$3.57 \$0.85 \$6.67 \$3.57 \$0.85 \$6.67 \$3.57 \$0.81 \$1.14 |
| Biosolid Woody Biomass GT 2011 BIOMASS TAX CREDITS Vegetative Biomass GT 2012 BIOMASS TAX CREDITS Coll de | Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Yard Debris 2010 Total 2011 Manure Oil Seed Used Oil/Grease Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Yard Debris 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Wastewater Biosolid Woody Biomass | 12,606 1,590 480,015 33,660 141,671 829,160 2,856,970 24,887 2,839 426,250 35,516 147,190 No Activity 2,788,491 5,870 | WT WT WT WT Gallons Gallons WT WT WT WT | \$126,057 \$15,897 \$4,834,190 \$168,296 \$5,770,671 \$708,357 \$41,458 \$285,697 \$248,869 \$28,388 \$4,056,098 \$172,363 \$5,541,231 | 18,909 4,451 4,698,767 201,961 5,161,133 85,003 4,454 337,608 37,330 7,949 4,172,476 213,098 4,857,918 | 0.1500 2.8000 9.7888 6.0000 0.6000 0.1182 0.1182 1.5000 2.8000 9.7888 6.0000 | 2,48 58 61,745 2,654 67,820 1,117 59 4,436 491 104 54,829 2,800 63,836 | \$6.67 \$3.57 \$1.03 \$0.83 \$1.12 \$8.33 \$9.31 \$0.85 \$6.67 \$3.57 \$0.85 \$6.67 \$3.57 \$0.81 \$0.81 \$1.14 |
| 2011 BIOMASS TAX CREDITS Vard Used Vegetative Biomass GT 2012 BIOMASS TAX CREDITS 2012 BIOMASS TAX CREDITS Coll de local | Wastewater Biosolid Woody Biomass GT Yard Debris 2010 Total 2011 Total 2011 Manure Oil Seed Used Oil/Grease Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Yard Debris 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Wastewater Biosolid Woody Biomass | 1,590 480,015 33,660 2,856,970 2,856,970 24,887 2,839 426,250 35,516 147,190 No Activity 2,788,491 5,870 No Activity | WT WT WT Gallons Gallons WT WT WT WT WT | \$15,897 \$4,834,190 \$168,296 \$5,770,671 \$708,357 \$41,458 \$285,697 \$248,869 \$28,388 \$4,056,098 \$172,363 \$5,541,231 | 4,451 4,698,767 201,961 5,161,133 85,003 4,454 337,608 37,330 7,949 4,172,476 213,098 4,857,918 | 2.8000 9.7888 6.0000 0.1182 0.1182 1.5000 2.8000 9.7888 6.0000 | 58 61,745 2,654 67,820 1,117 59 4,436 491 104 54,829 2,800 63,836 | \$3.57 \$1.03 \$0.83 \$1.12 \$8.33 \$9.31 \$0.85 \$6.67 \$3.57 \$0.85 \$6.67 \$3.57 \$0.81 \$1.14 |
| ST 2011 BIOMASS TAX CREDITS Vegetative Biomass GT 2012 BIOMASS TAX CREDITS 2012 BIOMASS TAX CREDITS Coll defined by the second | Woody Biomass GT Yard Debris 2010 Total 2011 Manure Oil Seed Used Oil/Grease Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Yard Debris 2011 Total 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Yard Debris | 480,015 33,660 2,856,970 2,856,970 24,887 2,839 426,250 35,516 147,190 No Activity 2,788,491 5,870 | WT WT Gallons Gallons WT WT WT WT | \$4,834,190 \$168,296 \$5,770,671 \$708,357 \$41,458 \$285,697 \$248,869 \$28,388 \$4,056,098 \$172,363 \$5,541,231 | 4,698,767 201,961 5,161,133 85,003 4,454 337,608 37,330 7,949 4,172,476 213,098 4,857,918 | 9,7888 6,0000 0,1182 0,1182 1,5000 2,8000 9,7888 6,0000 | 61,745 2,654 67,820 1,117 59 4,436 491 104 54,829 2,800 63,836 | \$1.03 \$0.83 \$1.12 \$8.33 \$9.31 \$0.85 \$6.67 \$3.57 \$0.85 \$6.67 \$3.57 \$0.97 \$0.81 \$1.14 |
| Biomass GT 2011 BIOMASS TAX CREDITS Vegetative Biomass GT 2012 BIOMASS TAX CREDITS 2012 BIOMASS TAX CREDITS Used Used Used Used Used Used Used Used Used Used Used Used Used | Yard Debris 2010 Total 2011 Manure Oil Seed Used Oil/Grease Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT 2011 Total 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Yard Debris 2014 | 33,660 141,671 829,160 2,856,970 24,887 2,839 426,250 35,516 147,190 No Activity 2,788,491 5,870 No Activity | WT Gallons Gallons WT WT WT WT WT | \$168,296 \$5,770,671 \$708,357 \$41,458 \$285,697 \$248,869 \$28,388 \$4,056,098 \$172,363 \$5,541,231 | 201,961 5,161,133 85,003 4,454 337,608 37,330 7,949 4,172,476 213,098 4,857,918 | 6.0000 0.6000 0.1182 0.1182 1.5000 2.8000 9.7888 6.0000 | 2,654 67,820 1,117 59 4,436 491 104 54,829 2,800 63,836 | \$0.83 \$1.12 \$8.33 \$9.31 \$0.85 \$6.67 \$3.57 \$0.97 \$0.81 \$1.14 |
| CT 2011 BIOMASS TAX CREDITS Vegetative Biomass CO 2012 BIOMASS TAX CREDITS Vegetative Biomass CT 2013 BIOMASS TAX CREDITS Vegetative Biomass 2013 BIOMASS TAX CREDITS Vegetative Biomass 2013 BIOMASS TAX CREDITS Vegetative Biomass 2014 BIOMASS TAX CREDITS Vegetative Biomass CO CO CO CO CO CO CO CO CO CO | 2010 Total 2011 Manure Oil Seed Used Oil/Grease Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Yard Debris 2011 Total 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Vard Debric | 141,671 829,160 2,856,970 24,887 2,839 426,250 35,516 147,190 No Activity 2,788,491 5,870 No Activity | WT Gallons Gallons WT WT WT WT | \$5,770,671 \$708,357 \$41,458 \$285,697 \$248,869 \$28,388 \$4,056,098 \$172,363 \$5,541,231 \$725,947 | 5,161,133 85,003 4,454 337,608 37,330 7,949 4,172,476 213,098 4,857,918 | 0.6000 0.1182 0.1182 1.5000 2.8000 9.7888 6.0000 | 67,820 1,117 59 4,436 491 104 54,829 2,800 63,836 | \$1.12 \$8.33 \$9.31 \$0.85 \$6.67 \$3.57 \$0.97 \$0.81 \$1.14 |
| 2011 BIOMASS TAX CREDITS Vegetative Biomass GT 2012 BIOMASS TAX CREDITS Vegetative Biomass COLORED Vegetative Biomass 2013 BIOMASS TAX CREDITS Vegetative Biomass 2013 BIOMASS TAX CREDITS Vegetative Biomass 2014 BIOMASS TAX CREDITS Vegetative Biomass Colored Colo | 2011 Manure Oil Seed Used Oil/Grease Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Yard Debris 2011 Total 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Yard Debric | 141,671 829,160 2,856,970 24,887 2,839 426,250 35,516 147,190 No Activity 2,788,491 5,870 No Activity | WT Gallons Gallons WT WT WT WT | \$708,357 \$41,458 \$285,697 \$248,869 \$28,388 \$4,056,098 \$172,363 \$5,541,231 | 85,003 4,454 337,608 37,330 7,949 4,172,476 213,098 4,857,918 | 0.6000 0.1182 0.1182 1.5000 2.8000 9.7888 6.0000 | 1,117 59 4,436 491 104 54,829 2,800 63,836 | \$8.33 \$9.31 \$0.85 \$6.67 \$3.57 \$0.97 \$0.81 \$1.14 |
| Vard Debris Vegetative Biomass GT 2012 BIOMASS TAX CREDITS 2013 BIOMASS TAX CREDITS 2013 BIOMASS TAX CREDITS 2013 BIOMASS TAX CREDITS 2014 BIOMASS TAX CREDITS | 2011 Manure Oil Seed Used Oil/Grease Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Yard Debris 2011 Total 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Yard Debric | 141,671 829,160 2,856,970 24,887 2,839 426,250 35,516 147,190 No Activity 2,788,491 5,870 No Activity | WT Gallons Gallons WT WT WT WT WT | \$708,357 \$41,458 \$285,697 \$248,869 \$28,388 \$4,056,098 \$172,363 \$5,541,231 | 85,003 4,454 337,608 37,330 7,949 4,172,476 213,098 4,857,918 | 0.6000 0.1182 0.1182 1.5000 2.8000 9.7888 6.0000 | 1,117 59 4,436 491 104 54,829 2,800 63,836 | \$8.33 \$9.31 \$0.85 \$6.67 \$3.57 \$0.97 \$0.81 \$1.14 |
| Debris Woody Biomass GT 2012 BIOMASS TAX CREDITS 2012 BIOMASS TAX CREDITS Woody Biomass 2013 BIOMASS TAX CREDITS Vegetative Biomass 2013 BIOMASS TAX CREDITS Vegetative Biomass 2014 BIOMASS TAX CREDITS Used Oil/Grease 2014 BIOMASS TAX CREDITS | Manure Oil Seed Used Oil/Grease Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Yard Debris 2011 Total 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Yard Debris | 141,6/1 829,160 2,856,970 24,887 2,839 426,250 35,516 147,190 No Activity 2,788,491 5,870 | WI Gallons Gallons WT WT WT WT | \$708,357 \$41,458 \$285,697 \$248,869 \$28,388 \$4,056,098 \$172,363 \$5,541,231 | 85,003 4,454 337,608 37,330 7,949 4,172,476 213,098 4,857,918 | 0.6000 0.1182 0.1182 1.5000 2.8000 9.7888 6.0000 | 1,117 59 4,436 491 104 54,829 2,800 63,836 | \$8.33 \$9.31 \$0.85 \$6.67 \$3.57 \$0.97 \$0.81 \$1.14 |
| Vegetative Biomass GT 2012 BIOMASS TAX CREDITS 2012 BIOMASS TAX CREDITS Used Used Oil/Grease Used Oil/Grease Used Oil/Grease Used Oil/Grease Used Oil/Grease Oil/Grease Oil/Grease Oil/Grease Oil/Grease Oil/Grease Oil/Grease Oil/Grease Oil/Grease Oil/Grease Oil/Grease Oil/Grease Oil/Grease Oil/Grease Oil/Grease Oil/Grease | Ui seed Used Oil/Grease Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Yard Debris 2011 Total 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Yard Debris | 2,856,970 24,887 24,887 2,839 426,250 35,516 147,190 No Activity 2,788,491 5,870 | Gallons Gallons WT WT WT WT | \$41,458 \$285,697 \$248,869 \$28,388 \$4,056,098 \$172,363 \$5,541,231 | 4,454 337,608 37,330 7,949 4,172,476 213,098 4,857,918 | 0.1182 0.1182 1.5000 2.8000 9.7888 6.0000 | 4,436 491 104 54,829 2,800 63,836 | \$9.31 \$0.85 \$6.67 \$3.57 \$0.97 \$0.81 \$1.14 |
| 2012 BIOMASS TAX CREDITS Woody Biomass GT 2012 BIOMASS TAX CREDITS Used Used OII/Grease Used OII/Grease Used OII/Grease Manure | Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Yard Debris 2011 Total 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Yard Debris | 2,856,970 24,887 2,839 426,250 35,516 147,190 No Activity 2,788,491 5,870 | WT WT WT WT WT | \$285,697 \$248,869 \$28,388 \$4,056,098 \$172,363 \$5,541,231 \$735,947 | 337,608 37,330 7,949 4,172,476 213,098 4,857,918 | 0.1182 1.5000 2.8000 9.7888 6.0000 | 4,436 491 104 54,829 2,800 63,836 | \$0.85 \$6.67 \$3.57 \$0.97 \$0.81 \$1.14 |
| 2012 BIOMASS TAX CREDITS 2012 BIOMASS TAX CREDITS Used Used Used Used Used Used Used Used Used Used Used Oil/Grease Used Oil/Grease Used Oil/Grease Manure Manure Manure Manure Manure Used Manure | Vegetative Biomass G1 Wastewater Biosolid Woody Biomass GT Yard Debris 2011 Total 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Yard Debris | 24,887 2,839 426,250 35,516 147,190 No Activity 2,788,491 5,870 | WT WT WT WT | \$248,869 \$28,388 \$4,056,098 \$172,363 \$5,541,231 \$735,947 | 37,330 7,949 4,172,476 213,098 4,857,918 | 1.5000 2.8000 9.7888 6.0000 | 491 104 54,829 2,800 63,836 | \$8.67 \$3.57 \$0.97 \$0.81 \$1.14 |
| Biosolid Biomass GT 2012 BIOMASS TAX CREDITS 2013 BIOMASS TAX CREDITS 2013 BIOMASS TAX CREDITS 2013 BIOMASS TAX CREDITS Used Used Oil/Grease 2014 BIOMASS TAX CREDITS Used Oil/Grease 00000000000000000000000000000000000 | Wastewater Biosolid Woody Biomass GT Yard Debris 2011 Total 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Yard Debric | 2,839 426,250 35,516 147,190 No Activity 2,788,491 5,870 No Activity | WT WT WT | \$28,388 \$4,056,098 \$172,363 \$5,541,231 | 4,172,476 213,098 4,857,918 | 2.8000 9.7888 6.0000 | 104 54,829 2,800 63,836 | \$3.57 \$0.97 \$0.81 \$1.14 |
| 2012 BIOMASS TAX CREDITS 2012 BIOMASS TAX CREDITS Woody Biomass 2013 BIOMASS TAX CREDITS Woody Biomass 2013 BIOMASS TAX CREDITS Woody Biomass Used OIL/Grease Manure Manure Manure Mody Biomass Manure | Voody Biomass GT Yard Debris 2011 Total 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Yard Debris | 426,250 35,516 147,190 No Activity 2,788,491 5,870 No Activity | WT | \$4,056,098 \$172,363 \$5,541,231 \$735,947 | 4,172,476 213,098 4,857,918 | 6.0000 | 2,800 63,836 | \$0.97 \$0.81 \$1.14 |
| CI 2012 BIOMASS TAX CREDITS Used Voody Biomass 2013 BIOMASS TAX CREDITS Vegetative Biomass Used Oll/Grease Control Biomass Control | 2011 Total 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Yard Debric | 147,190 No Activity 2,788,491 5,870 | WT | \$172,303 \$5,541,231 \$735,947 | 4,857,918 | 6.0000 | 63,836 | \$0.81 \$1.14 |
| 2012 BIOMASS TAX CREDITS Woody Biomass 2013 BIOMASS TAX CREDITS Woody Biomass 2013 BIOMASS TAX CREDITS Woody Biomass 2014 BIOMASS TAX CREDITS Woody Biomass Control of the second s | 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass Yard Debric | 147,190 No Activity 2,788,491 5,870 | WT | \$ 7 35 947 | 4,00,214 | | 03,830 | Ş1.14 |
| 2012 BIOMASS TAX CREDITS Manure Used Used Oil/Grease Contaction of the second sec | 2012 Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass | 147,190 No Activity 2,788,491 5,870 | WT | \$735 947 | 00.214 | | | |
| Vegetative Biomass 2013 BIOMASS TAX CREDITS Vegetative Biomass Olif Grease Olif Grease Vegetative Olif Grease Manure | Manure Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass | 147,190 No Activity 2,788,491 5,870 | WT | \$735 947 | 00.214 | | | |
| Used Used Used Used Used Used Used Used | Oil Seed Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass | No Activity 2,788,491 5,870 | VV I | | XX - 1/- | 0 6000 | 1 160 | \$8.33 |
| Used Vegetative Biomass 2013 BIOMASS TAX CREDITS Vegetative Biomass Vegetative Used Oil/Grease Annue Manure | Used Oil/Grease Vegetative Biomass Wastewater Biosolid Woody Biomass | 2,788,491 5,870 | | <i> </i> | | 0.0000 | 1,100 | JO. JJ |
| Used Vegetative Biomass 2013 BIOMASS TAX CREDITS Vegetative Used Oil/Grease OI14 BIOMASS TAX CREDITS Voody Biomass OI1/Grease OI1/Grease OI1/Grease Manure | Vegetative Biomass Wastewater Biosolid Woody Biomass | 5,870 | Gallone | \$278 854 | 329 516 | 0 1182 | 4 330 | ŚO 85 |
| Coll/Grease Coll Sectors Coll S | Wastewater Biosolid Woody Biomass | No Activity | PDT | \$58 702 | 05 155 | 16 2100 | 4,330 | \$0.63 |
| Vegetative Biomass 2013 BIOMASS TAX CREDITS Vegetative Biomass Used Used Oil/Grease Annue Oil/Grease Manue | Woody Biomass | | BDT | <i>\$</i> 38,702 | 55,155 | 10.2100 | 1,230 | 90.02 |
| Vegetative Biomass 2013 BIOMASS TAX CREDITS Vegetative Biomass Used Oil/Grease Used Oil/Grease Voody Biomass Manure Manure | Voluy Biolilass | 197.076 | PDT | ¢1 970 762 | 2 270 000 | 17 /000 | 42.071 | ¢0 E7 |
| Biomass 2013 BIOMASS TAX CREDITS Woody Biomass Used Oil/Grease Used Oil/Grease Woody Biomass Manure Manure Manure | | 107,070 | | \$1,870,705 | 5,270,090 | 17.4000 | 42,971 | ŞU.37 |
| 2013 BIOMASS TAX CREDITS | 2012 Total | rionger Engli | ле | \$2 944 266 | 2 792 075 | | /0 712 | ¢0.79 |
| Vegetative Biomass Used Oil/Grease Used Oil/Grease Used Oil/Grease Used Oil/Grease Oil/Grease Oil/Grease Oil/Grease Oil/Grease Oil/Grease Oil/Grease Oil/Grease Oil/Grease Oil/Grease | 2012 10(a) | | | <i>Ş2,344,200</i> | 3,783,075 | | 49,712 | ŞU.76 |
| Woody Biomass Used | 2013 | | | | | | | |
| Biomass Used Oil/Grease Used Oil/Grease Used Oil/Grease Used Oil/Grease Manure | Manure | 670,935 | WT | \$3,354,666 | 402,561 | 0.6000 | 5,290 | \$8.33 |
| Vegetative Biomass Used Oil/Grease Woody Biomass Oil/Grease Woody Biomass Oil/Grease Manure | Oil Seed | No Activity | | | | | | |
| Vegetative Biomass Used Oil/Grease Used Oil/Grease Used Oil/Grease Manure | Used Oil/Grease | 3,410,855 | Gallons | \$341,086 | 403,061 | 0.1182 | 5,296 | \$0.85 |
| Used Oil/Grease Manure | Vegetative Biomass | 6,333 | BDT | \$63,327 | 102,654 | 16.2100 | 1,349 | \$0.62 |
| Used Oil/Grease Manure | Wastewater Biosolid | No Activity | | | | | | |
| Used Oil/Grease Used Oil/Grease Oil/Grease Manure | Woody Biomass | 103,291 | BDT | \$1,033,005 | 1,805,535 | 17.4800 | 23,726 | \$0.57 |
| 2014 BIOMASS TAX CREDITS Woody Biomass Oil/Grease Manure | Yard Debris | longer Eligi | ole | | | | | |
| 2014 BIOMASS TAX CREDITS Woody Biomass Oil/Grease Manure | 2013 Total | | | \$4,792,083 | 2,713,811 | | 35,661 | \$1.77 |
| Used Oil/Grease Manure | | | | | | | | |
| Used Oil/Grease Manure | 2014 Preliminary | F04 -0 - | 11.07 | 62 504 555 | 242.000 | 0.0000 | | 60.00 |
| Used Oil/Grease Manure | ivianure Oil Coord | 521,534 | VV I | \$2,584,987 | 312,920 | 0.6000 | 4,112 | \$8.26 |
| Manure | UII Seed | NO ACTIVITY | C-11 | 607.000 | 70.055 | 0.4402 | 1.054 | 60.05 |
| Manure | Used OII/Grease | 6/6,607 | Gallons | \$67,660 | /9,955 | 0.1182 | 1,051 | ŞU.85 |
| Manure | vegetative Biomass | NO ACTIVITY | | | | | | |
| Manure | wastewater Biosolid | NO ACTIVITY | DDT | 6202 502 | 1 402 522 | 17 4000 | 10 404 | 60.20 |
| | Woody Biomass | 84,813 | BDI | \$293,583 | 1,482,532 | 17.4800 | 19,481 | Ş0.20 |
| | Yard Debris | No longer E | ligible | 62.046.220 | 1 975 407 | | 24 644 | ć1 F7 |
| i i i | 2014 10(a) | í. | 1 | \$2,946,230 | 1,875,407 | | 24,044 | \$1.57 |
| 2010-2014 BIOMASS TAX CREDITS Yard Debris | 2010-2014 Tax Year | Material QT | ' Std Unit | Certification Amount | Million BTU* | Million BTU per Unit | Households Powered** | TC \$ Per Million BTU |
| Woody Biomass | Manure | 1,572,899 | WT | \$7,841,801 | 943,739 | 0.6000 | 12,401 | \$8.31 |
| GT | Oil Seed | 1,143,420 | Gallons | \$57,171 | 6,142 | 0.1182 | 81 | \$9.31 |
| | | 11,259,682 | Gallons | \$1,125,973 | 1,330,557 | 0.1182 | 17,484 | \$0.85 |
| | Used Oil/Grease | 12,203 | BDT | \$122,029 | 197,809 | 16.2100 | 2,599 | \$0.62 |
| | Used Oil/Grease Vegetative Biomass | 37,493 | WT | \$374,926 | 56,239 | 1.5000 | 739 | \$6.67 |
| | Used Oil/Grease Vegetative Biomass Vegetative Biomass GT | 4,428 | WT | \$44,284 | 12.400 | 2,8000 | 163 | \$3.57 |
| Oil See | Used Oil/Grease Vegetative Biomass Vegetative Biomass GT Wastewater Biosolid | ., .20 | BDT | \$3,197,350 | 6.558.157 | 17,4800 | 86,178 | \$0.49 |
| Used Oil/Great | Used Oil/Grease Vegetative Biomass Vegetative Biomass GT Wastewater Biosolid Woody Biomass | 375 181 | WT | \$8,890.288 | 8.871.242 | 9.7888 | 116.573 | \$1.00 |
| Woody Wastewater Vegetative Vegetati | Used Oil/Grease Vegetative Biomass Vegetative Biomass GT Wastewater Biosolid Woody Biomass Woody Biomass GT | 375,181 | | \$340 658 | 415 050 | 6 0000 | 5 454 | \$0.87 |
| Biosolid Biomass GT Biomas | Used Oil/Grease Vegetative Biomass Vegetative Biomass GT Wastewater Biosolid Woody Biomass GT Woody Biomass GT | 375,181 906,265 | W/Т | J. JHU U IO | 410.009 | 0.0000 | 241 (72) | Ψ 0.0 2 |
| | Used Oil/Grease Vegetative Biomass Vegetative Biomass GT Wastewater Biosolid Woody Biomass Woody Biomass GT Yard Debris 2010-2014 Tay Yaar | 375,181 906,265 69,176 | WT | \$21 994 480 | 18 391 344 | | 741 674 | \$1.20 |

