# Oregon Department of Energy

*Leading Oregon to a safe, clean, and sustainable energy future*

## The Biogas / RNG Inventory – Advisory Committee

Meeting 5
April 10, 2018

Dan Avery

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# SB 334 – RNG Advisory Committee

## Agenda for today

1:00 to 1:15 Northwest Alliance for Clean Transportation (NW ACT) Introduction. Alex Schay and Connor Reiten

1:15 pm to 2:15 pm Presentation by the JP Batmale from the Oregon Public Utility Commission followed by an open discussion.

2:15 to 3:00 – Update on draft feedstock inventory, report development, perspectives write-ups and possible policy topics.

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# SB 334 – RNG Advisory Committee

## Goals for today

Better understanding of OPUC and how that influences our next steps.

Brief update on inventory work.

Prioritize and continue discussions on barriers, opportunities and policy concepts that relate to the production and utilization of RNG in Oregon.

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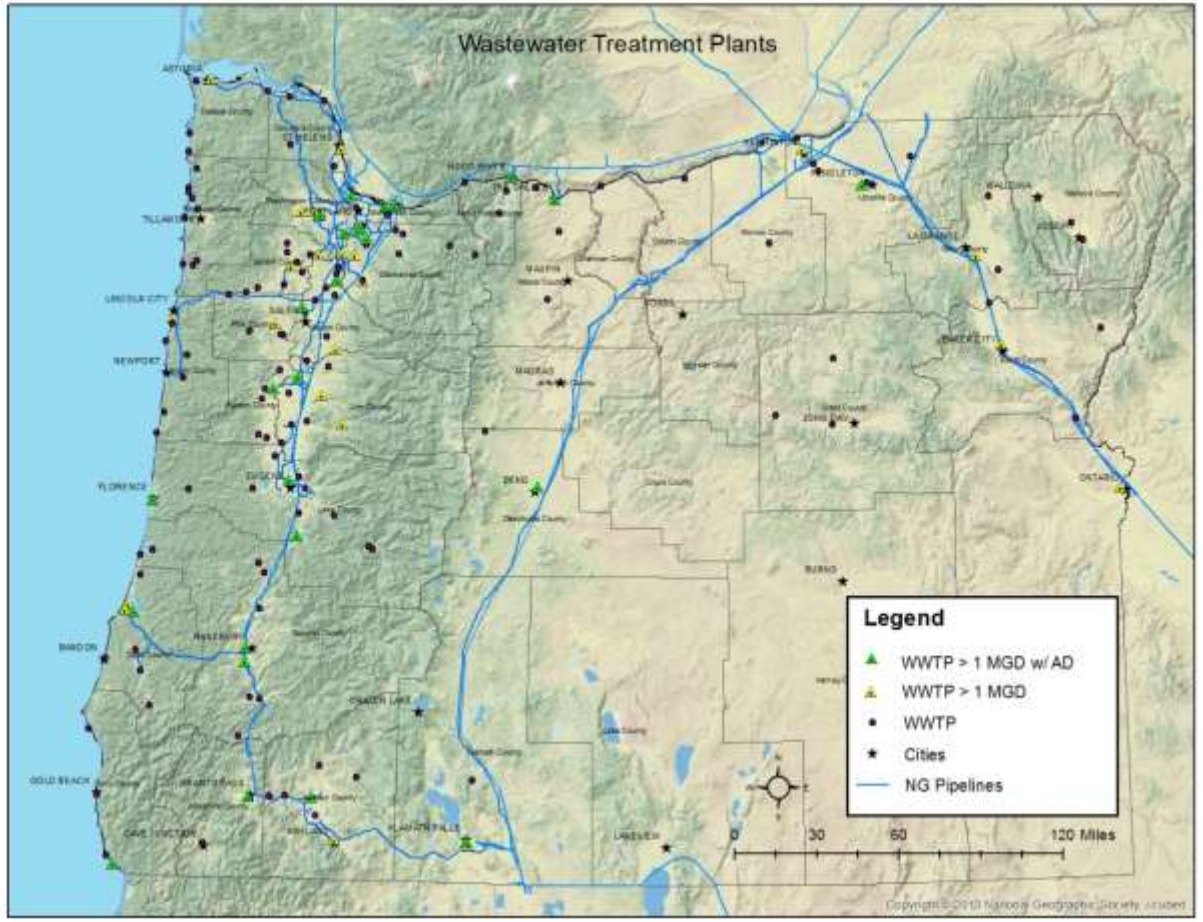
# Feedstock Inventories - WWTP




| Name | City | Est. Biogas vol. scf / year | Est. CH4 vol. scf/year (@ 60% CH4 biogas) | BTU (~1,000 btu /scf CH4) | CHP | Boiler | Flare |
|---|---|---|---|---|---|---|---|
| Albany | Albany | 82,563,000 | 49,537,800 | 49,537,800,000 | | | |
| Bend WWTP | Bend | 62,451,500 | 37,470,900 | 37,470,900,000 | | | |
| Brookings WWTP | Brookings | 15,877,500 | 10,320,375 | 10,320,375,000 | | | |
| Cottage Grove | Cottage Grove | 21,593,400 | 12,956,040 | 12,956,040,000 | | | |
| Coos Bay WWTP No. 1 | Coos Bay | 24,345,500 | 15,824,575 | 15,824,575,000 | | | |
| Corvallis WWTP | Corvallis | 82,033,750 | 53,321,938 | 53,321,938,000 | | | |
| Florence WWTP | Florence | | | | | | |
| Grants Pass | Grants Pass | 55,042,000 | 35,777,300 | 35,777,300,000 | | | |
| Gresham | Gresham | 148,190,000 | 96,323,500 | 96,323,500,000 | | | |
| Hermiston | Hermiston | 21,170,000 | 13,760,500 | 13,760,500,000 | | | |
| Hood River | Hood River | 12,130,410 | 7,884,767 | 7,884,767,000 | | | |
| Klamath Falls | Klamath Falls | 29,638,000 | 19,264,700 | 19,264,700,000 | | | |
| Medford | Medford | 193,705,500 | 125,908,575 | 125,908,575,000 | | | |
| Pendleton | Pendleton | 23,287,000 | 15,136,550 | 15,136,550,000 | | | |
| Columbia Blvd | Portland | 682,732,500 | 443,776,125 | 443,776,125,000 | | | |
| Tryon Creek | Portland | 73,883,300 | 48,024,145 | 48,024,145,000 | | | |
| Willow Lake | Salem | 314,374,500 | 204,343,425 | 204,343,425,000 | | | |
| The Dalles | The Dalles | 22,651,900 | 14,723,735 | 14,723,735,000 | | | |
| Troutdale | Troutdale | 22,228,500 | 14,448,525 | 14,488,525,000 | | | |
| Woodburn | Woodburn | 31,649,150 | 20,571,948 | 20,571,948,000 | | | |
| Kellogg Creek | Oregon City | 83,621,500 | 50,172,900 | 50,172,900,000 | | | |
| Tri City | Oregon city | 74,095,000 | 44,457,000 | 44,457,000,000 | | | |
| Durham | Tigard | 242,597,615 | 145,558,569 | 145,558,569,000 | | | |
| Rock Creek | Hillsboro | 338,931,700 | 203,359,020 | 203,359,020,000 | | | |
| Eugene/Springfield | Eugene | 407,522,500 | 244,513,500 | 244,513,500,000 | | | |
| Roseburg | Roseburg | 50,172,900 | 30,103,740 | 30,103,740,000 | | | |
| Tillamook | Tillamook | | | | | | |
| Winston-Green | Winston | 10,585,000 | 6,351,000 | 6,351,000,000 | | | |
| Sub total | | | | | | | |

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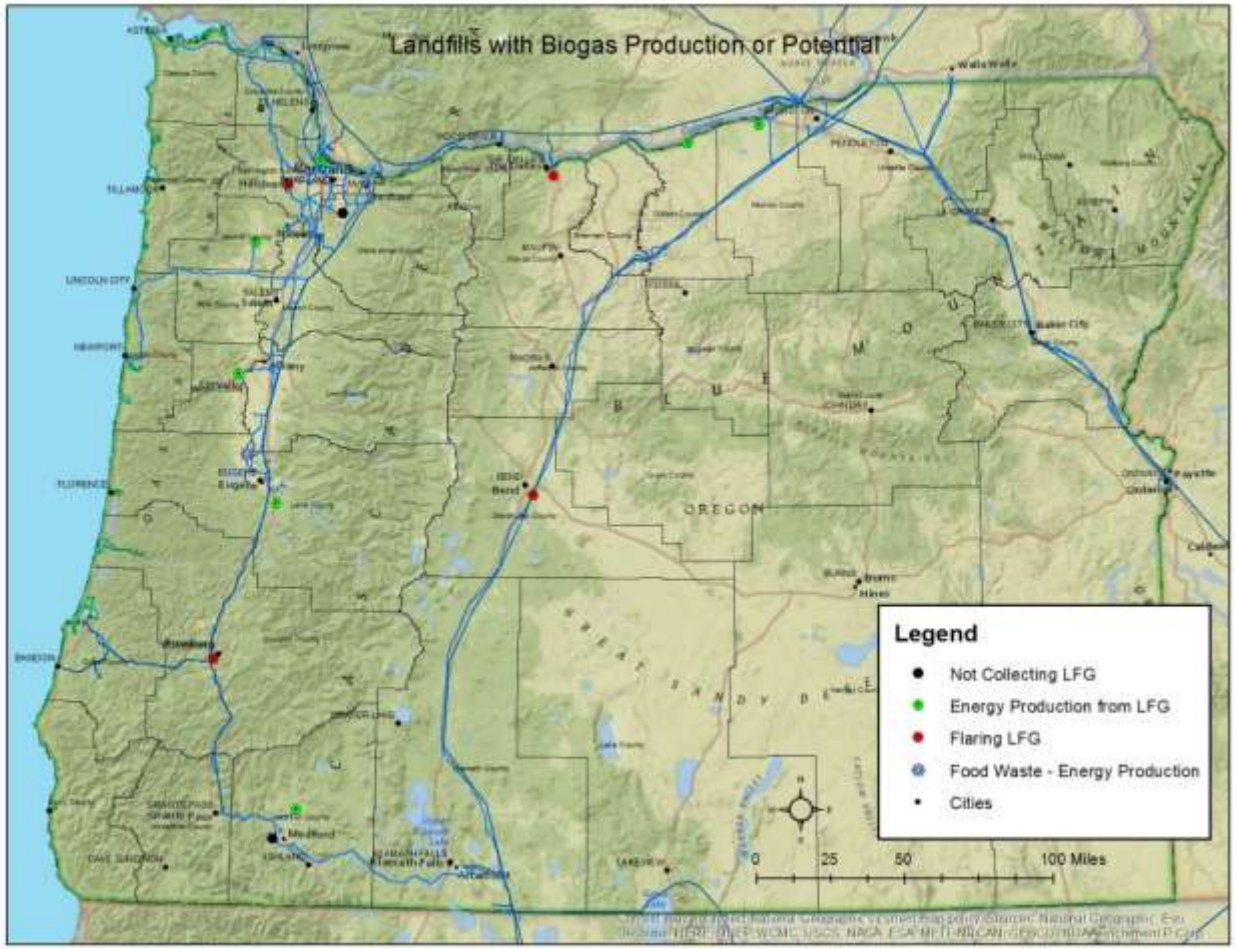
# Feedstock Inventories - Landfills




| County | Modeled CH4 (cf/yr) | Reported CH4 (cf/yr) |
|---|---|---|
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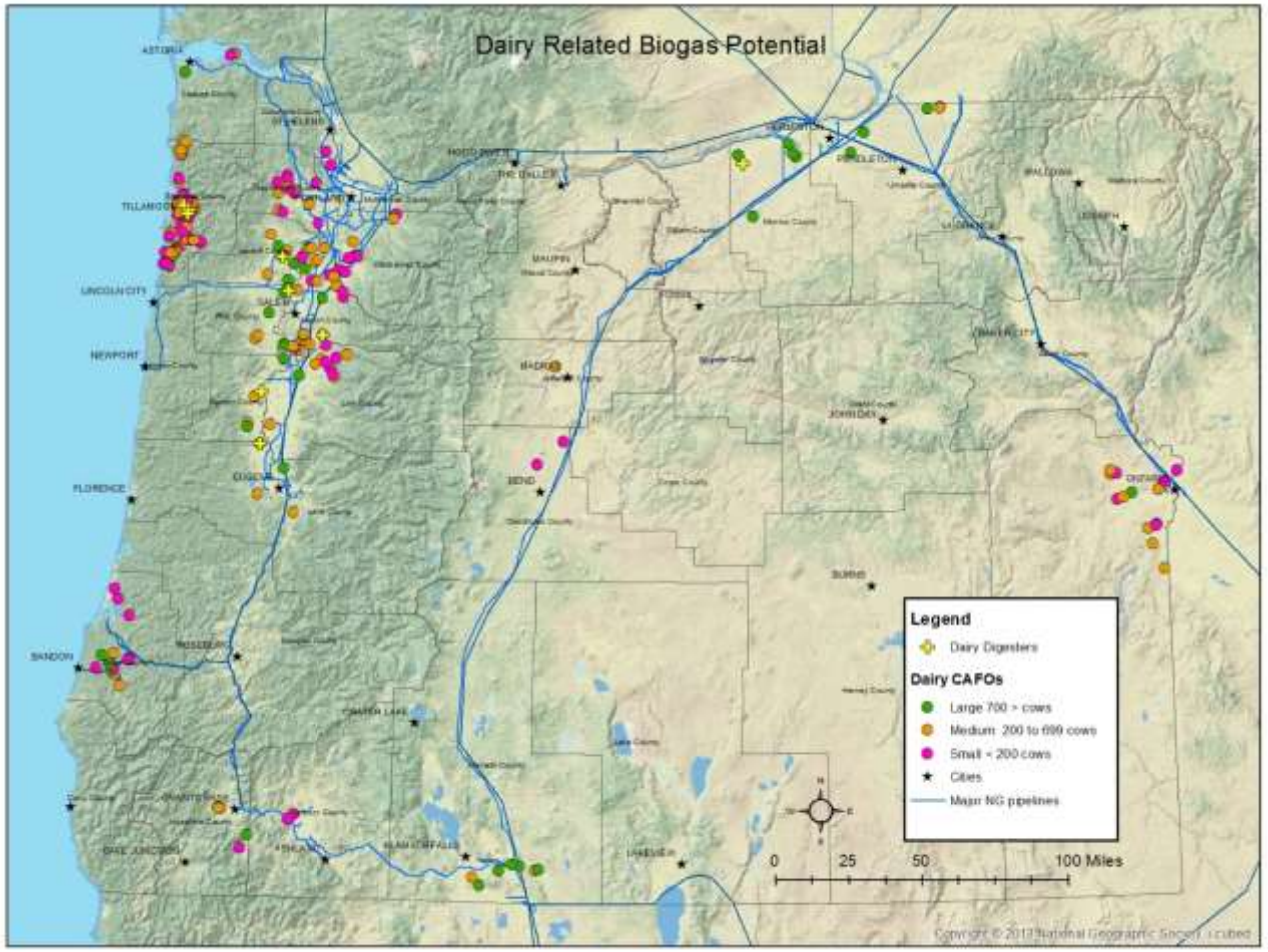
# Feedstock Inventories - Agricultural Manure




| County | Manure (lb/yr) | Volatile Solids (lb/yr) | CH4 (cf/yr) |
|---|---|---|---|
| Crook | 245,580 | 28,833 | 110,719 |
| Deschutes | 9,734,625 | 1,044,959 | 4,012,642 |
| Jefferson | 4,355,240 | 462,084 | 1,774,402 |
| Klamath | 309,681,371 | 37,510,529 | 144,040,430 |
| Malheur | 178,410,747 | 21,817,613 | 83,779,634 |
| Morrow | 2,193,859,287 | 253,509,870 | 973,477,902 |
| Umatilla | 99,815,765 | 11,944,147 | 45,865,523 |
| Tillamook | 1,019,615,959 | 119,002,385 | 456,969,157 |
| Clatsop | 28,349,626 | 3,349,573 | 12,862,361 |
| Coos | 97,579,704 | 11,478,224 | 44,076,380 |
| Benton | 79,092,898 | 9,101,752 | 34,950,729 |
| Clackamas | 55,704,144 | 6,511,915 | 25,005,752 |
| Columbia | 3,539,743 | 430,445 | 1,652,910 |
| Josephine | 56,123,161 | 6,792,349 | 26,082,620 |
| Lane | 133,644,583 | 15,659,804 | 60,133,647 |
| Linn | 114,560,477 | 14,424,957 | 55,391,836 |
| Marion | 231,119,506 | 27,614,361 | 106,039,146 |
| Washington | 117,003,128 | 14,355,778 | 55,126,188 |
| Yamhill | 285,131,850 | 33,285,496 | 127,816,303 |
| Polk | 31,682,035 | 3,983,271 | 15,295,762 |
| Multnomah | 778,579 | 86,811 | 333,353 |
| Jackson | 5,621,186 | 638,371 | 2,451,346 |
| TOTAL | **5,055,649,192** | **593,033,526** | **2,277,248,741** |

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# Feedstock Inventories - Waste Food


| | Yard Debris | | | | Food Waste | | | |
|---|---|---|---|---|---|---|---|---|
| County | Disposed | Recovered | Generated | | Disposed | Recovered | Generate | |
| | | | | | | | | |
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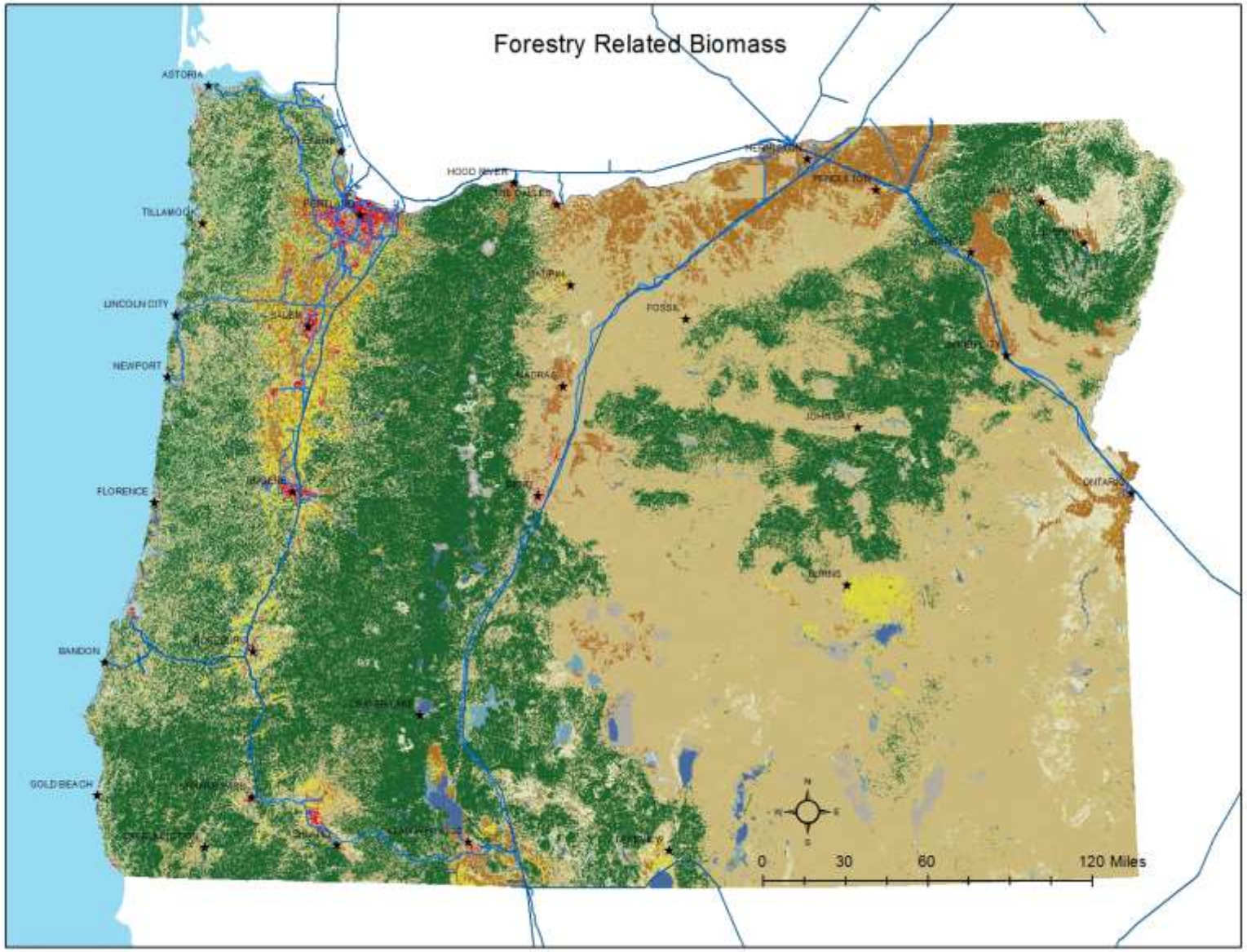
# Feedstock Inventories - Forestry Cellulosic Biomass

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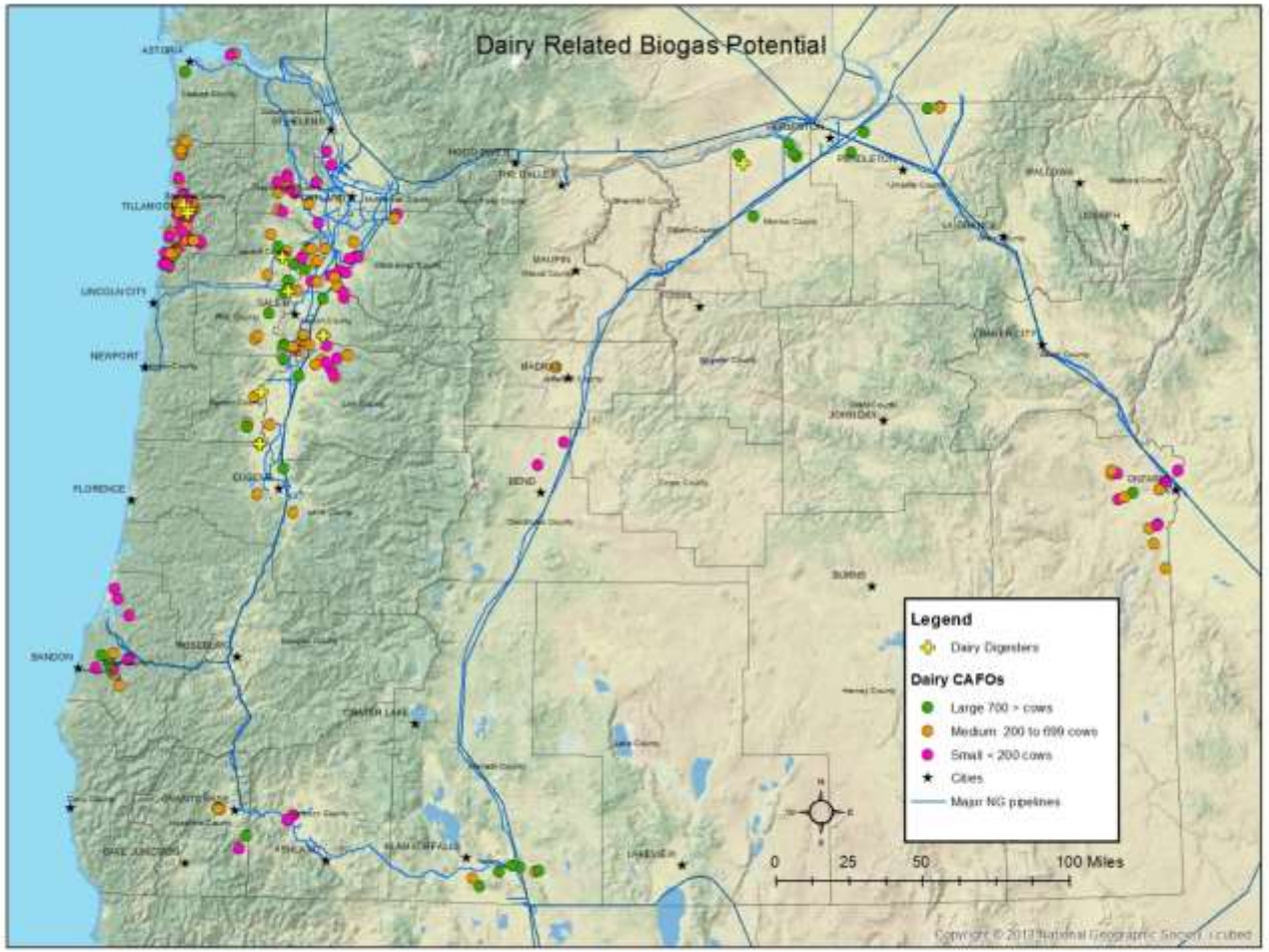
# Feedstock Inventories - Agricultural Residual Biomass




| County | Modeled CH4 (cf/yr) | Reported CH4 (cf/yr) |
|---|---|---|
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# SB 334 – RNG Advisory Committee

## Next Steps – SB 334 AC

"…The committee shall make recommendations to the department:

(a) Regarding the identification and removal of barriers to producing and utilizing biogas and renewable natural gas in this state as a means toward providing the greatest feasible reductions in greenhouse gas emissions and improvements in air quality;

(b) On establishing policies to promote renewable natural gas; and

(c) On any other matters related to this section, as requested by the department."

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# Barriers Survey

Categories:

- Financial,
- Information,
- Market,
- Policy,
- Regulatory,
- and Other

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# Financial Barriers

Is access to financing a barrier to developing RNG? 41/50

Are gas upgrading costs to remove impurities, and increase heat content of biogas, barriers to developing RNG? 38/50

Is the cost of producing biogas a barrier to developing RNG? 30/50

Are interconnection costs for testing, verification, and pipeline construction barriers to developing RNG? 37/50

Is the cost to produce RNG at certain scales a barrier to developing RNG? 34/50

Are regulatory costs, such as permitting, barriers to developing new stationary sources of RNG? 17/50

# Information Barriers

| |
|---|
| Is the perception of risk due to unfamiliarity with biomass technologies and fuel supply chains a barrier to developing RNG? 23/50 |
| Is a lack of knowledge surrounding potential incentives for RNG a barrier for developing RNG? 21/50 |
| Is a lack of knowledge surrounding potential incentives for biogas a barrier? 17/50 |
| are current pipeline acceptance standards for injection of RNG into natural gas pipelines a barrier to developing RNG? 36/50 |
| Is a lack of standard purchase agreements a barrier to developing RNG? 13/50 |

# Market Barriers

| |
|---|
| Is the low cost of fossil natural gas a barrier to developing RNG? 26/50 |
| Are mismatches between biogas producers and consumers a barrier to developing RNG? 27/50 |
| Is a lack of natural gas vehicles or fleets a barrier to developing RNG? 30/50 |
| Is a lack of natural gas fueling infrastructure a barrier to developing RNG? 25/50 |

# Policy Barriers

| |
|---|
| Is a lack of incentive for implementation of biogas systems as resiliency infrastructure a barrier to developing biogas? Incentives need not be monetary. 24/50 |
| Is a lack of incentive for implementation of RNG systems as resiliency infrastructure a barrier to developing RNG? Incentives need not be monetary. 24/25 |
| Is existing policy that prevents Oregon utilities from making ratepayer-funded capital investments in RNG infrastructure, such as extension of pipelines or connection points for RNG producers, as well as the requierment for Utilities to purchase the least cost resource, a barrier to developing RNG? 33/50 |
| Is a lack of policy encouraging or mandating the source separation of wastes (such as food wastes) a barrier to developing RNG? 33/50 |
| Is a lack of financial incentives for natural gas vehicles and fleet conversions a barrier to developing RNG? 27.5/50 |
| Is a lack of financial incentives for natural gas fueling infrastructure a barrier to developing RNG? 31/50 |
| Is an inability to incorporate hydrogen into the pipeline through policy a barrier to developing RNG? 13/55 |
| Is an unwillingness to incorporate hydrogen into the pipeline a barrier? 13/50 |
| Is the Energy Trust of Oregon encouraging biogas-to-electricity production projects rather than RNG fuel projects a barrier to developing RNG? 25/50 |
| Is pipeline discrimination against RNG, even if it meets pipeline standards, a barrier? 23/50 |
| Are rigorous tariffs for RNG a barrier to developing RNG? 23/50 |

# Regulatory Barriers

| |
|---|
| Is the OPUC regulation requiring the procurement of the least-cost resource by Oregon utilities a barrier to developing RNG? 36/50 |
| Are existing pipeline injection standards a barrier to developing RNG? 34/50 |
| Is a lack of incentivization of biogas (or RNG) as a fuel under the Renewable Portfolio Standard a barrier to developing RNG? 25/50 |

# Other Barriers

| |
|---|
| Is proximity to tie-in points for the RNG/CNG grid a barrier to developing RNG? 37/50 |
| Are contracting risks a barrier to developing RNG? 23/50 |
| Are market competition risks for feedstock supplies (such as food waste for composting vs. anaerobic digestion) a barrier to developing RNG? 21/50 |
| Is production variation of RNG a barrier to developing RNG? 23/50 |
| Are out-of-state producers of RNG a barrier in developing in-state RNG? 14/50 |

# SB 334 – RNG Advisory Committee

## Next Steps -

ODOE

SB 334 Advisory Committee

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# SB 334 – Calendar

| Task | start | End | Duration |
|---|---|---|---|
| Advisory Committee formation | Aug. - 17 | Sep. 17 | 2 months |
| Inventory of gross available raw feedstocks | Aug. 17 | Feb. 18 | 6 months |
| Technology Review (AD and gasification) | Aug. 17 | Jan 18 | 3 months |
| Spreadsheet of existing biogas producers (w/spatial data) | Aug. 17 | Oct. 17 | 1 month |
| Estimates of gross biogas production | Sep. 17 | Feb. 18 | 5 months |
| Estimates of gross RNG production | Sep. 17 | Feb. 18 | 5 months |
| Biogas cleaning technology review | Sep. 17 | Nov. 17 | 2 months |
| Supply chain Analysis (by fuel type) | Oct. 17 | Apr. 18 | 6 months |
| Market Analysis (grant funded, pending) | | | |
| Policy Review and Development (on going) | | | |
| Life Cycle Analysis (grant funded, pending) | | | |
| Basic Economic / Market review | | | |
| Report Drafting | Jan. 1 - 18 | Sep. - 14 | |
| Draft report due - ODOE internal | Jul. 13, 2018 | | |
| Draft report due ODOE - Executive | Jul. 27 , 2018 | | |
| Draft Report due - partners | Aug. 10, 2018 | | |
| Draft Report due - ODOE Executive | Aug. 25, 2018 | | |
| Draft Report due Gov. Office | Sep. 1, 2018 | | |
| Final Report due ODOE Executives | Sep. 10, 2018 | | |
| Preliminary report due Legislature | Sep. 14, 2018 | | |

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# Questions

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