



Department of Commerce

# Promoting RNG and Nutrient Recovery in Washington State

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*Senior Energy Policy Specialist*

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# *Goal: Create economic value and environmental benefits with improved organic waste management*

- Reduce fugitive greenhouse gas emissions, especially methane
- Reduce carbon intensity of natural gas utilities
- Address excess nutrient problems and diversify revenue streams for agriculture, especially dairies
- Offset waste management facility operating costs
- Displace energy and carbon intensity of fertilizers



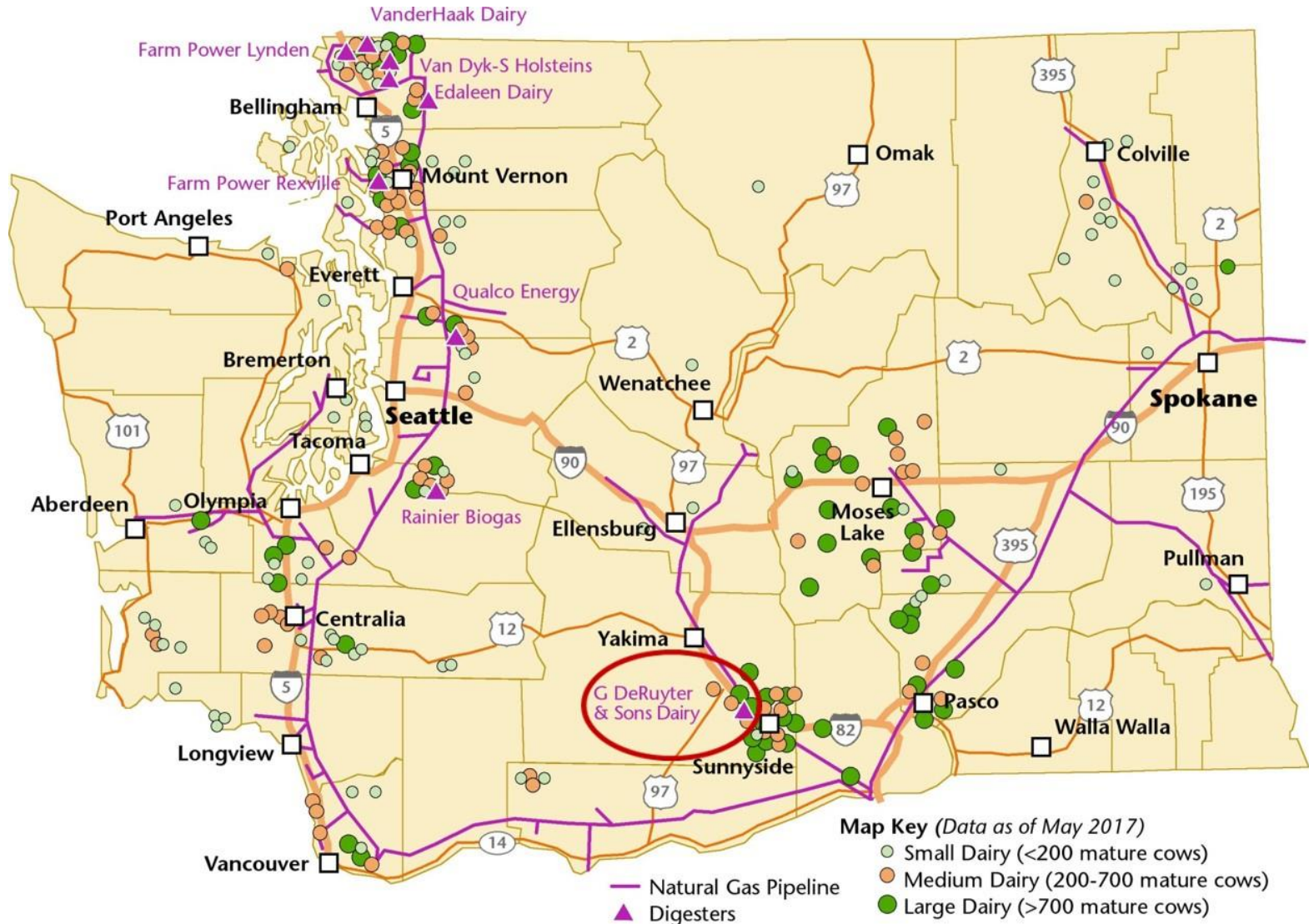
# *Initial Efforts*

- Stimulus funding for on-farm digesters
- WSU Waste-to-Resources funding
- Clean Energy Fund RD&D grants
- Conservation Commission digester grants

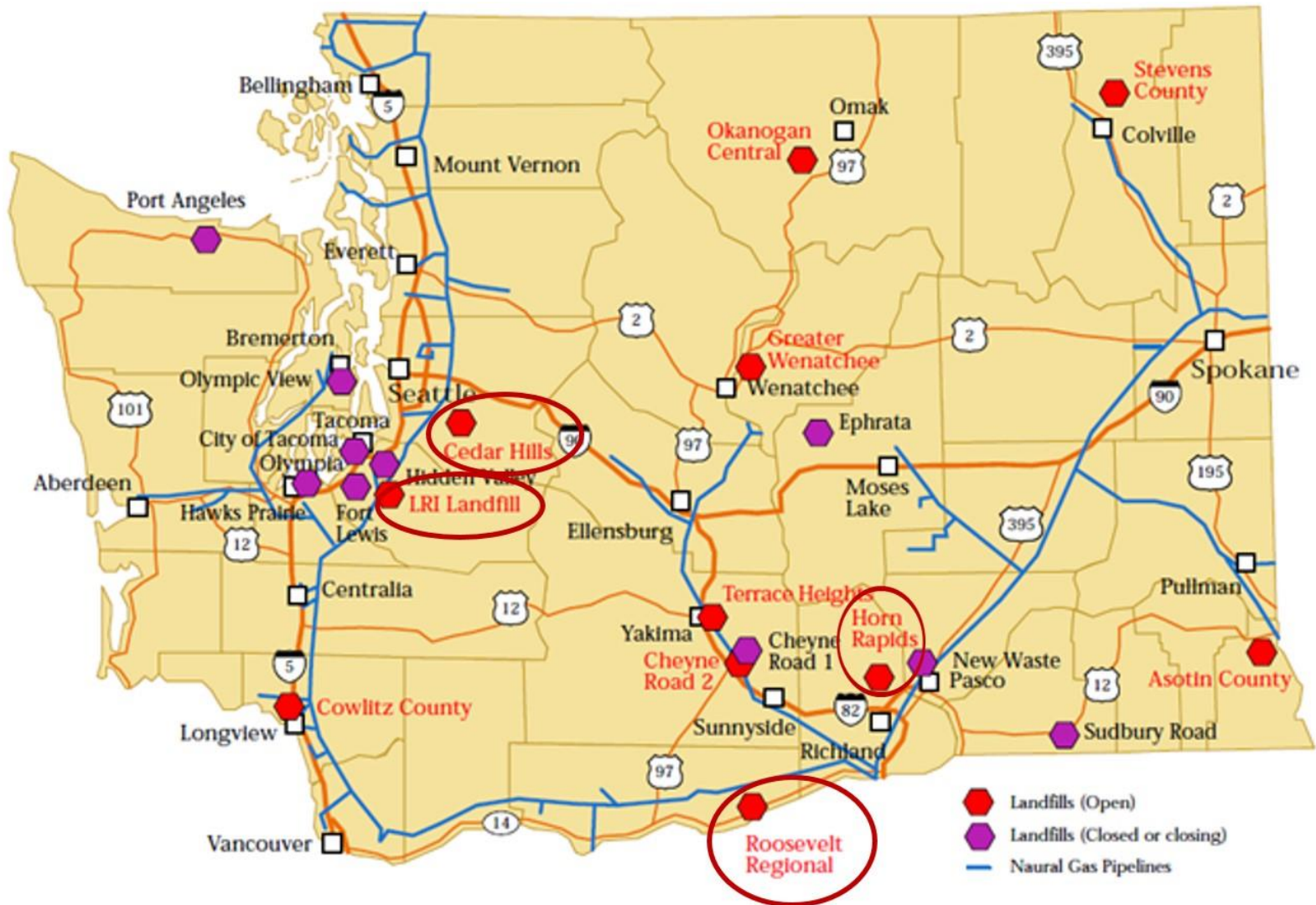
Positive results, but significant public investment, limited power sales, and uncertain future...



# Dairies: Stable, Innovating, but Stalled

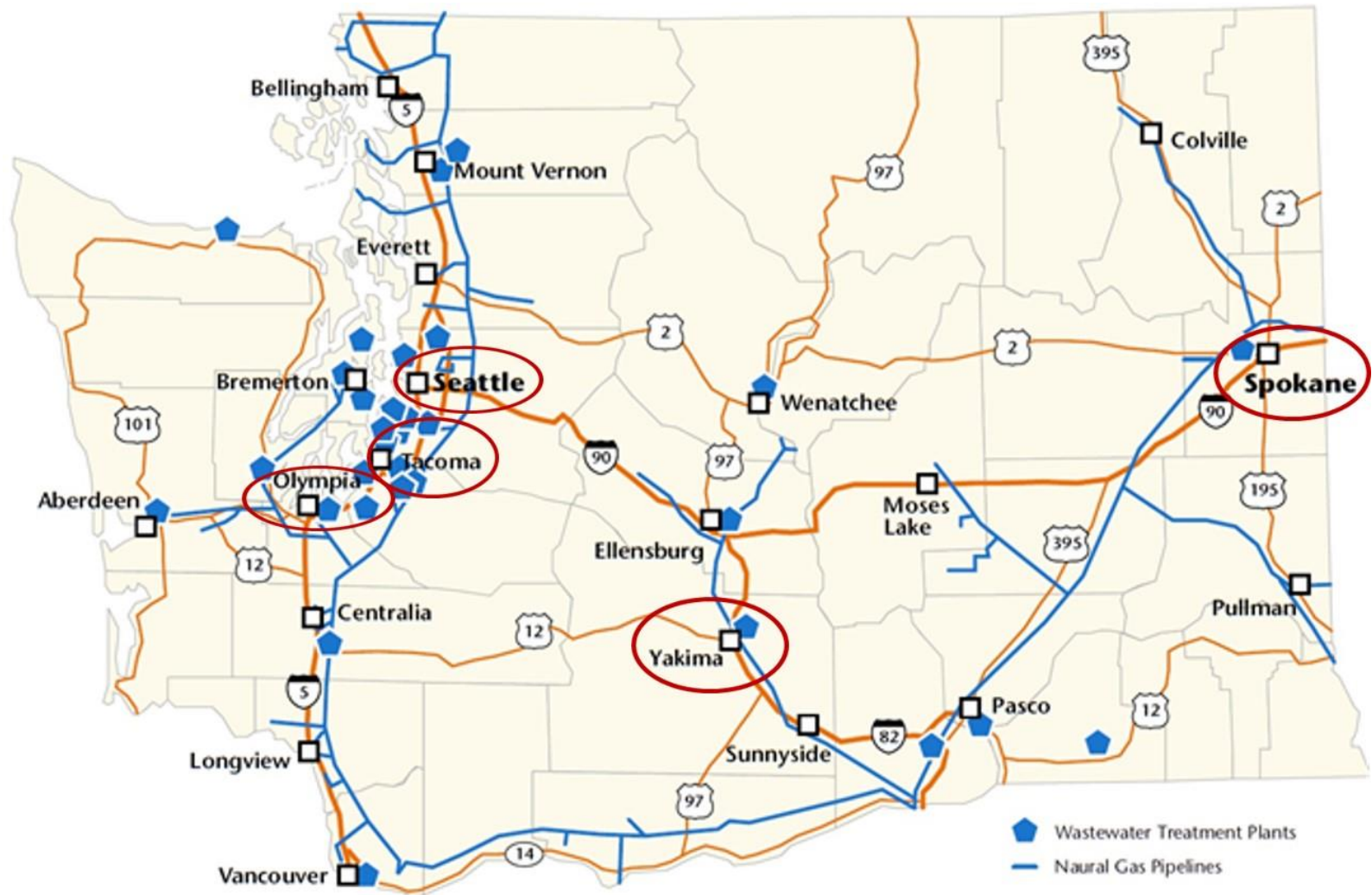


# Landfills: Making Progress





# Wastewater Treatment: Emerging Opportunities



# 2017 RNG Roadmap

## Power Sales Model Mature

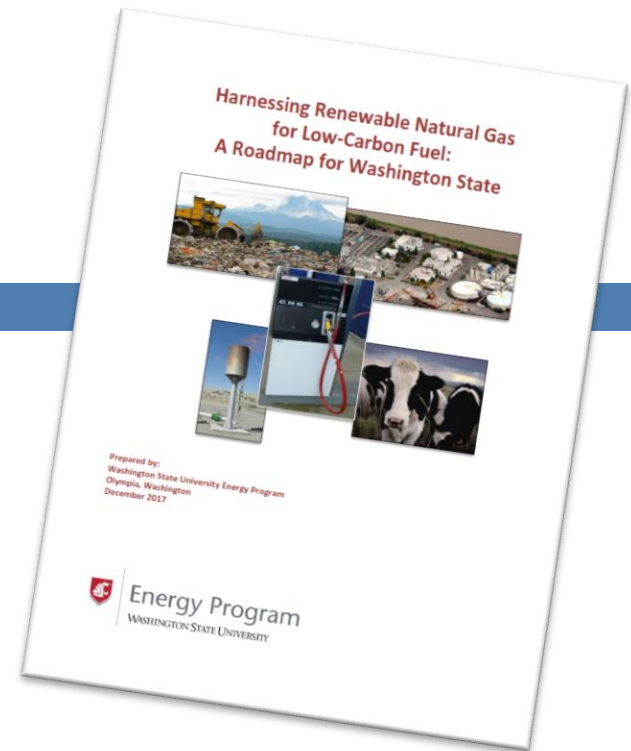
- Utility RPS compliance targets met
- RNG market moving to transportation

## Incentives Need an Overhaul

- Previous tax breaks expired
- Definitions dated, conflicting

## Pipeline Quality Standards

## Uncertain Policy Framework



Link: [bit.ly/2mowmWn](http://bit.ly/2mowmWn)



# 2018 Legislation (HB 2580)

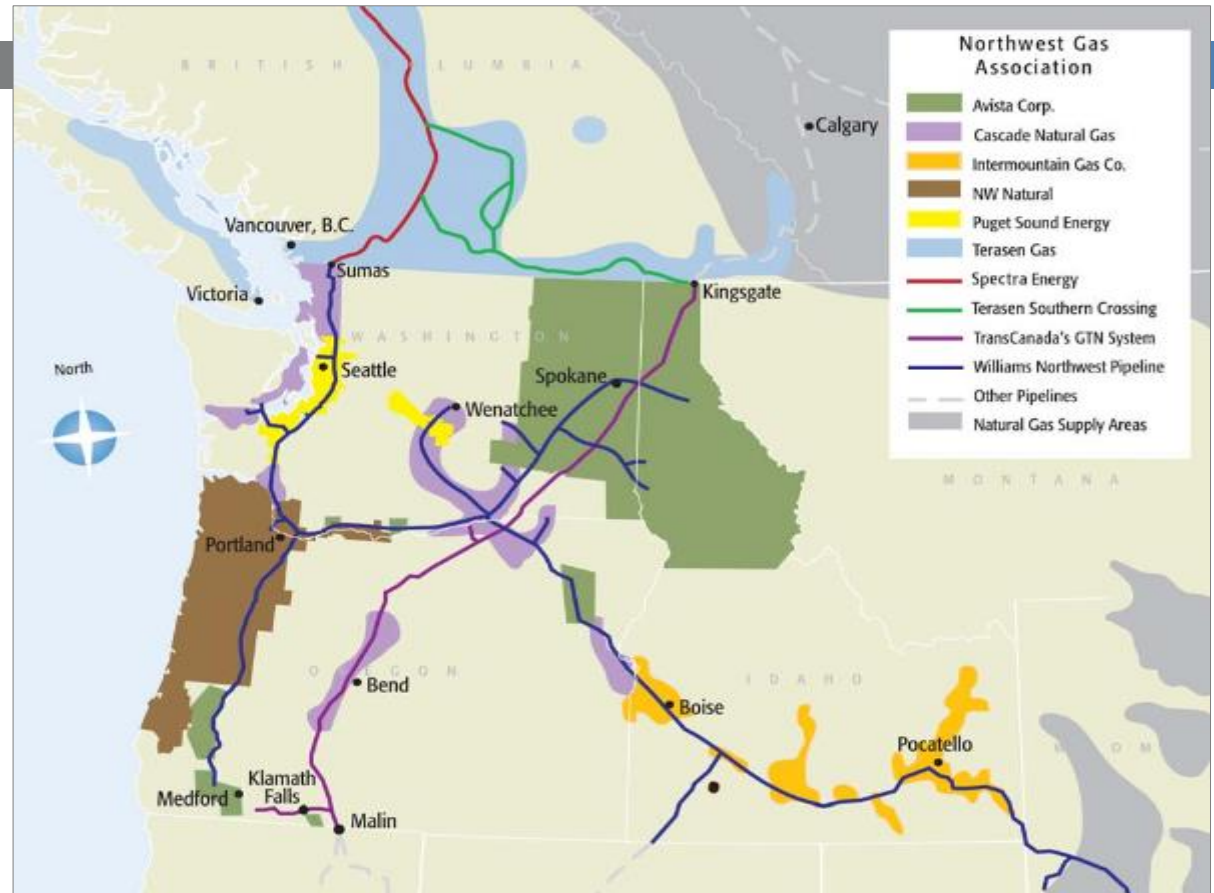
- Restore and expand production incentives
- Broader techno-economic assessment
- Update policy options
- Public sector preferential purchasing
- Regional voluntary pipeline standards





# First Step: Better data, pipelines

- Facilities within 5 miles
- Feedstocks within 30 miles
- Public-private partnerships, priorities for public funding
- Data sets dated, incomplete and/or inferred

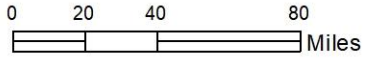


# Start with the larger dairies...



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community.

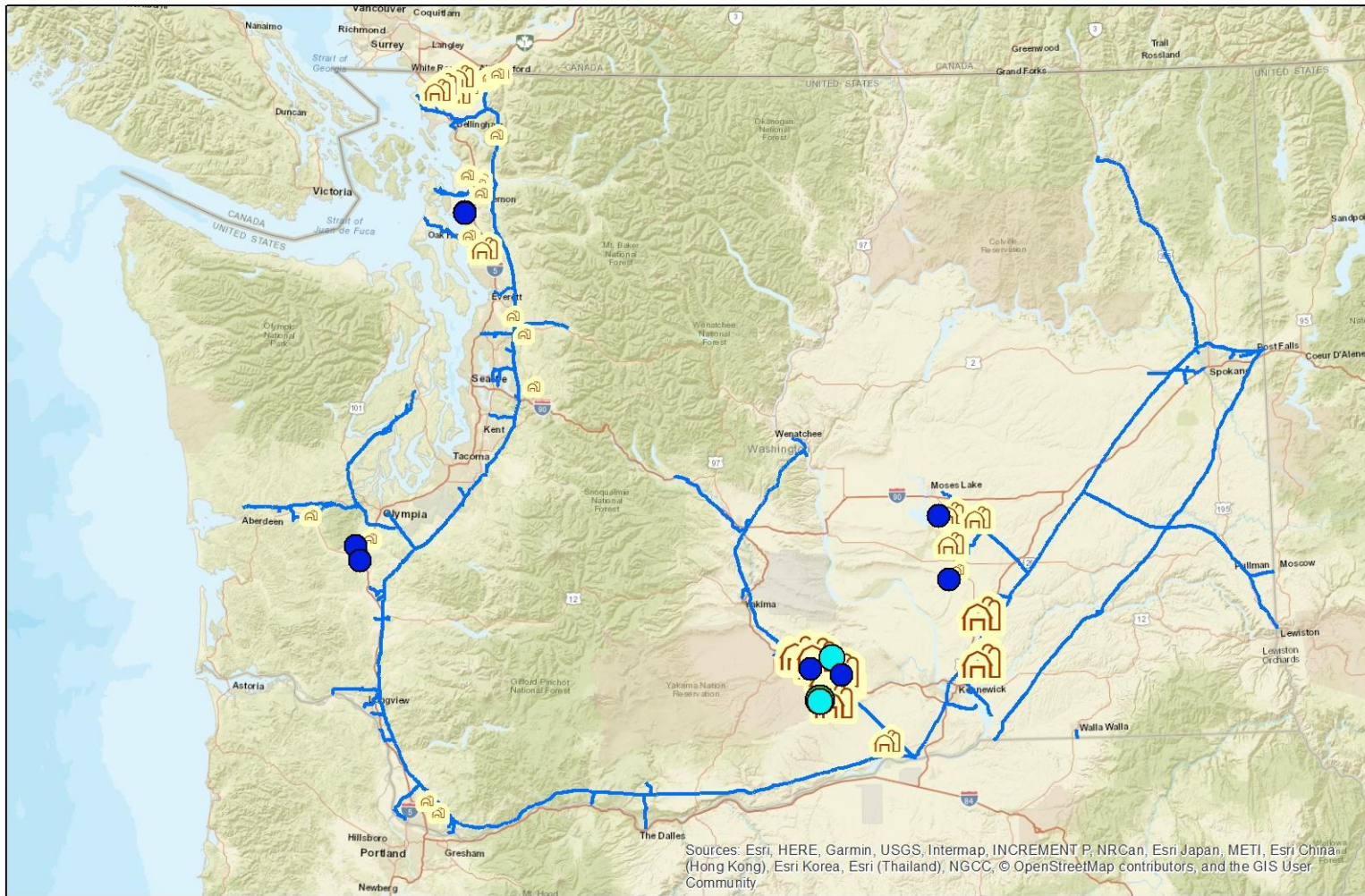
- Primary Dairies**
-  >100 scfm
  -  >50 scfm
  -  >200 scfm



Source: Washington State Energy Office






*...add dairies in close proximity to other dairies...*




Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community.



**Secondary Dairies**

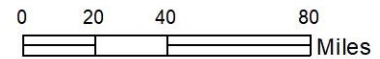
 >200 scfm

 >100 scfm  
 >50 scfm

**Primary Dairies**

 >200 scfm

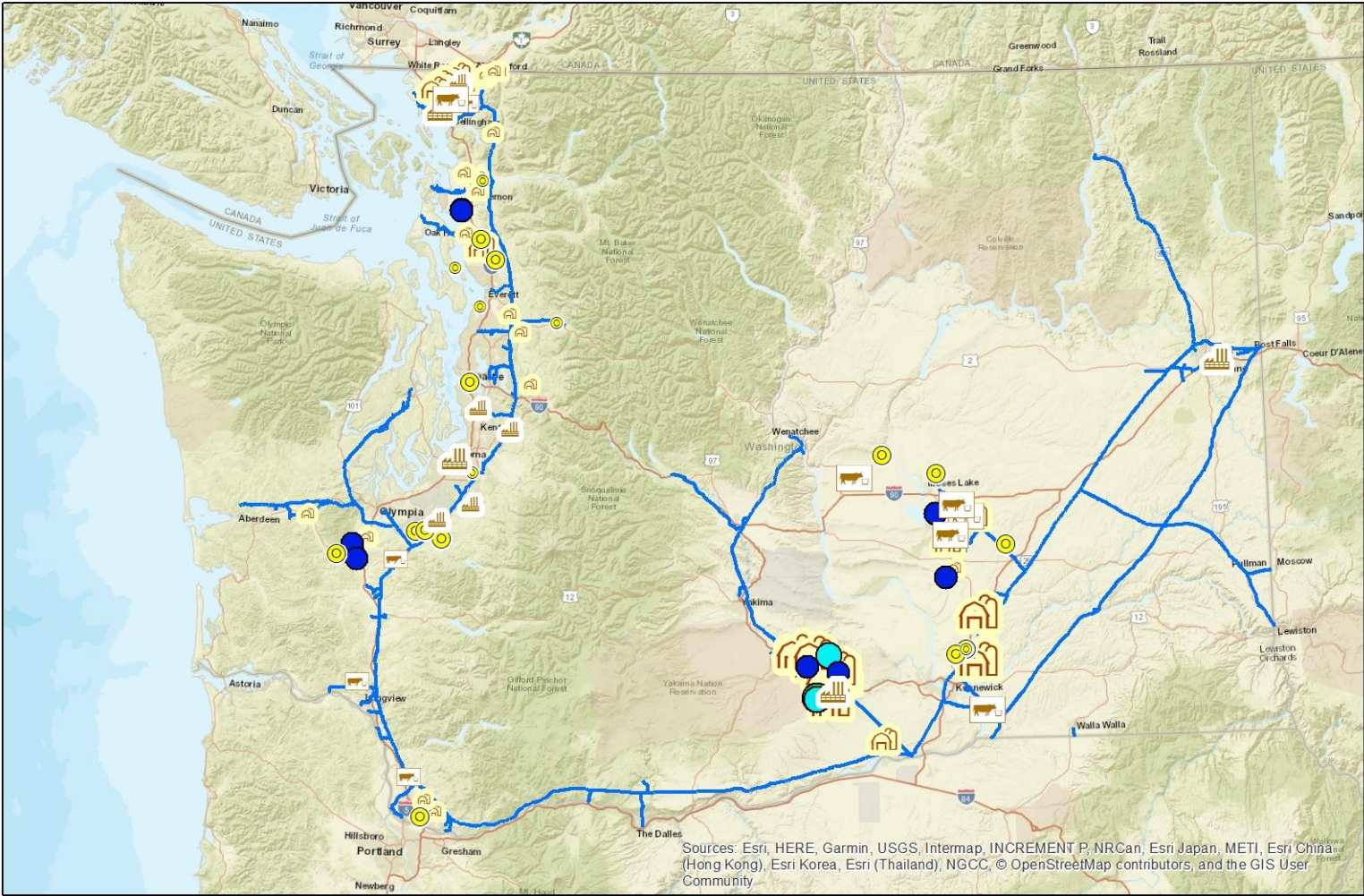
 >100 scfm  
 >50 scfm



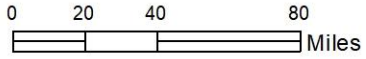
Source: Washington State Energy Office



# ...other sources of animal waste...



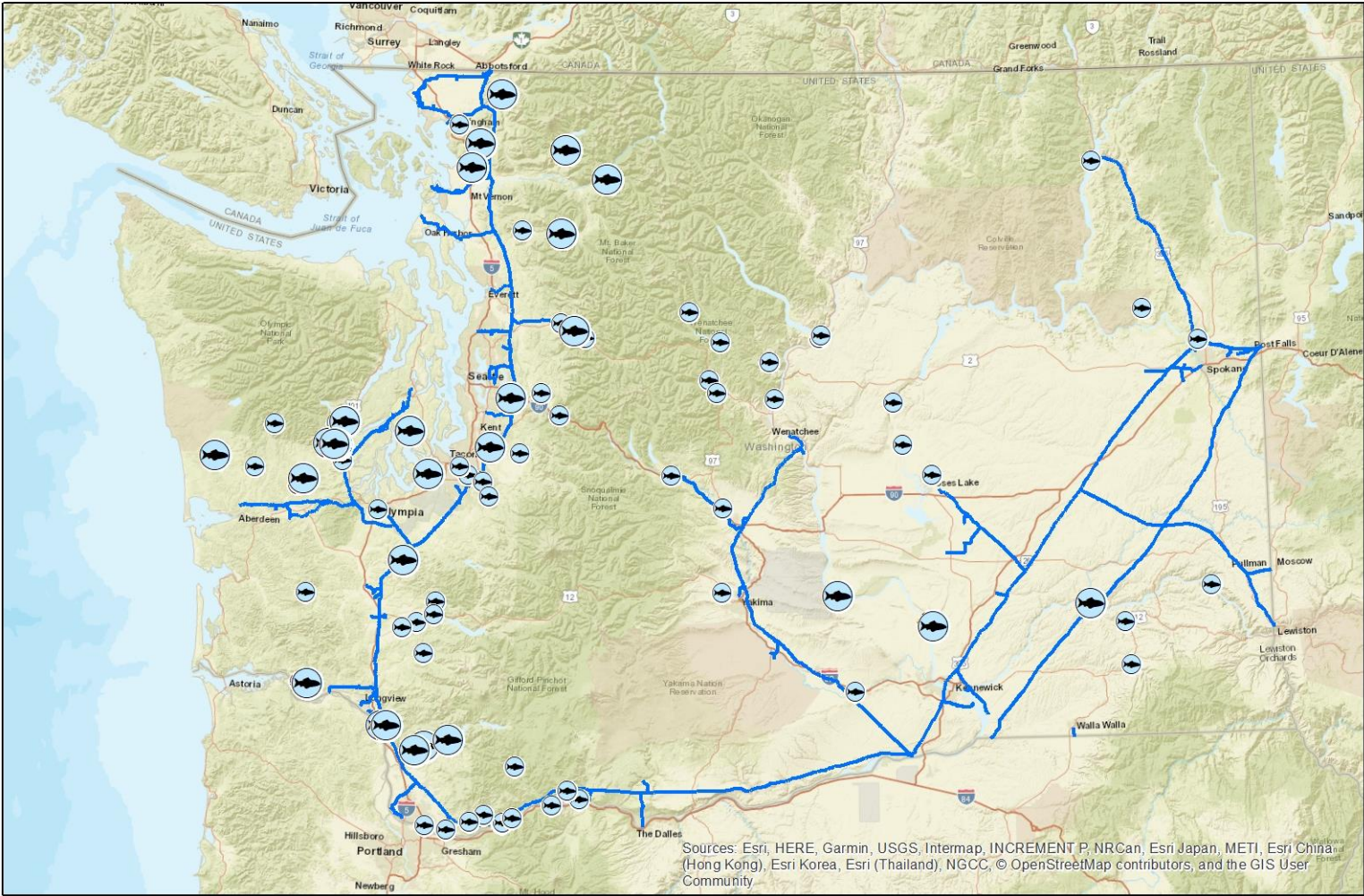
<b>Beef &amp; Poultry</b>	<b>Renderers</b>	<b>Egg Producers</b>	<b>Secondary Dairies</b>	<b>Primary Dairies</b>	>50 scfm
Large	Large	Large	>200 scfm	>200 scfm	
Medium	Medium	Medium	>100 scfm	>100 scfm	
			>50 scfm		





Source: Washington State Energy Office

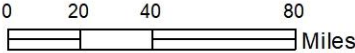


# ...don't forget hatcheries...



## Fish Hatcheries

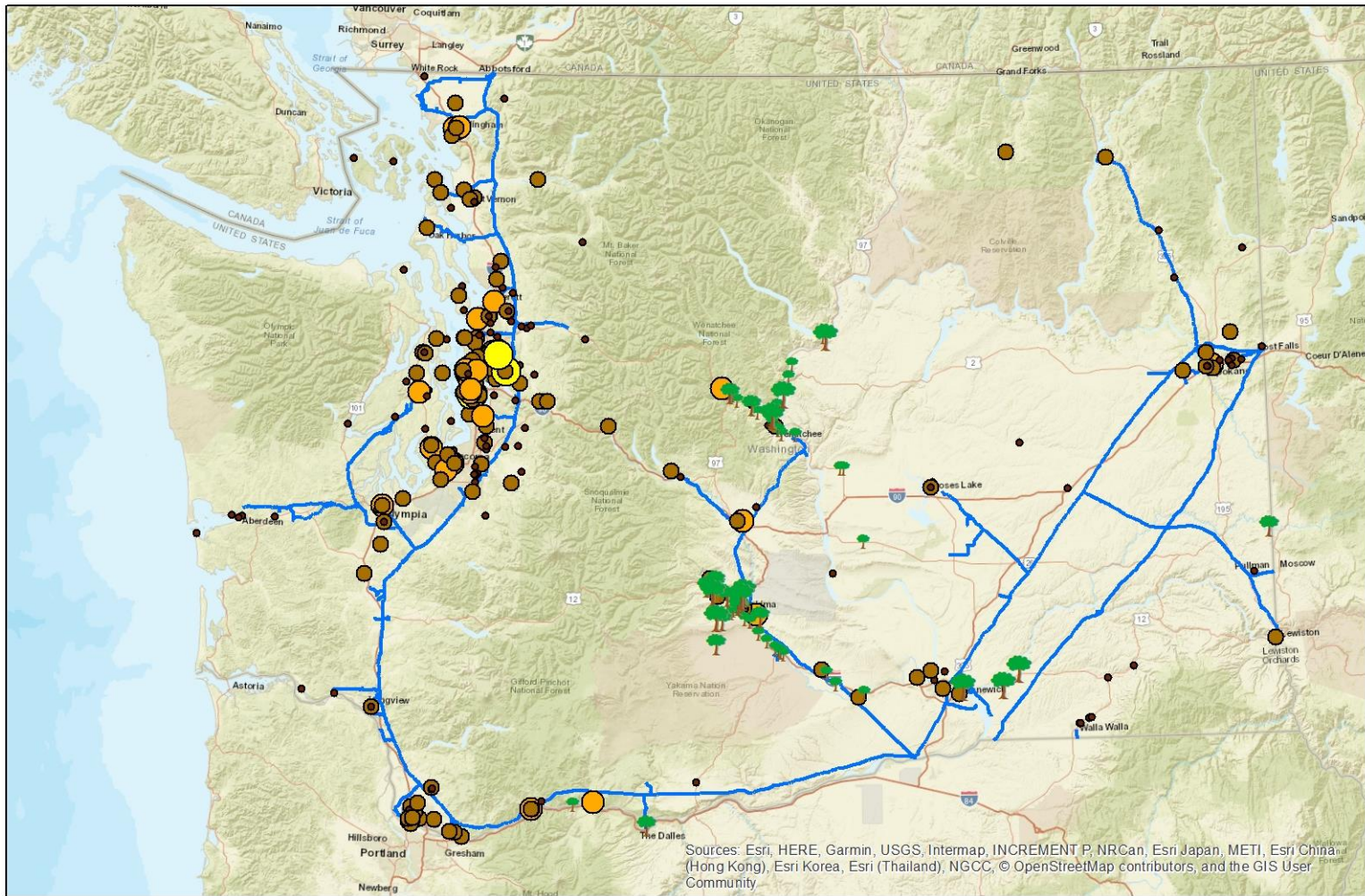
-  Carcass waste reported
-  No report






Source: Washington State Energy Office







# ...fruit growers, brewers and distillers...

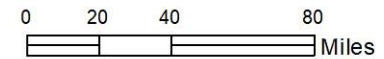


## Tree Fruit & Vineyards

-  >100k tons/yr and/or >50 employees
-  >50k tons/yr and/or >10 employees
-  Smaller packers

## Breweries & Distilleries

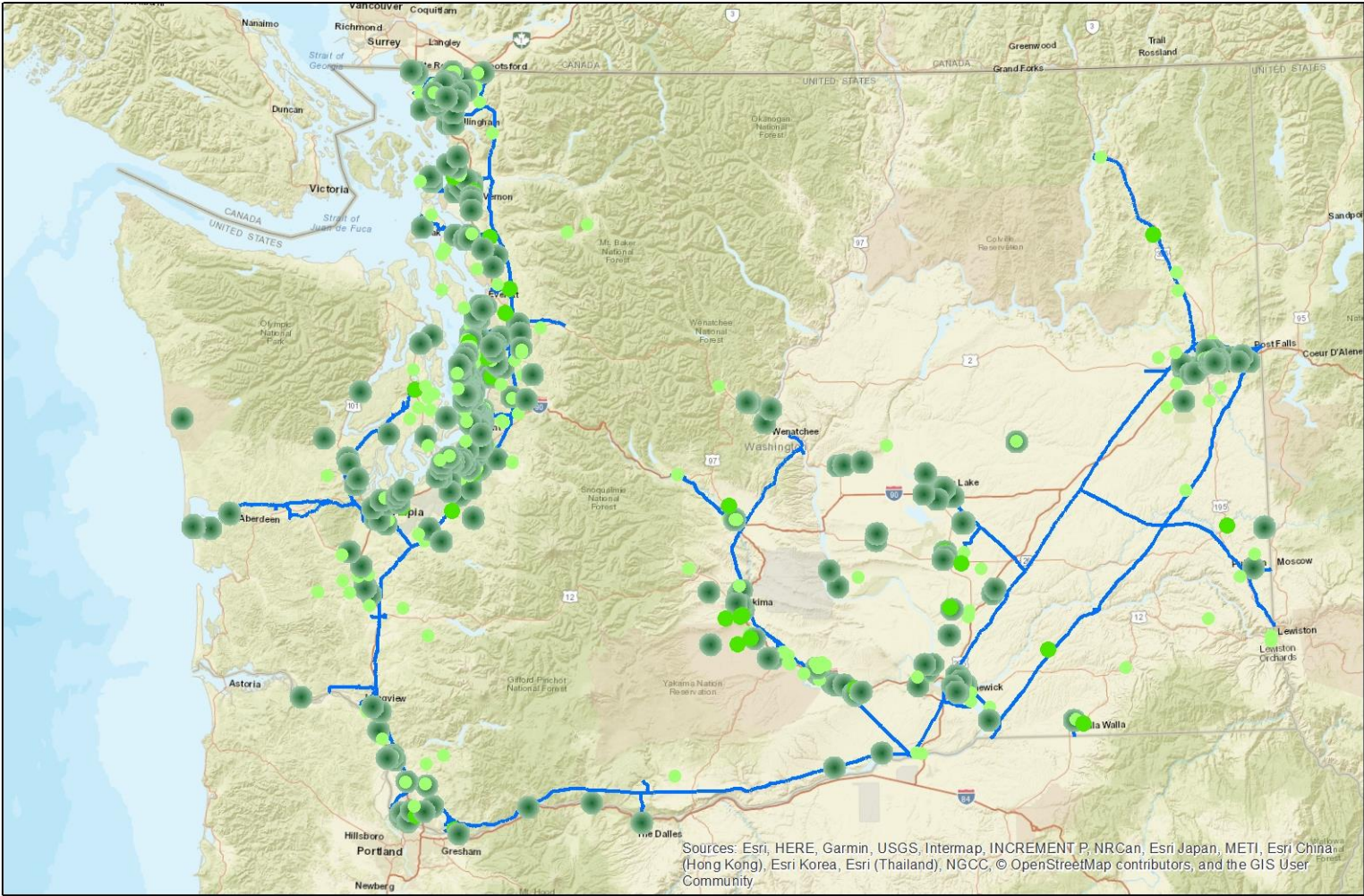
-  >1m gal/yr beer or >100k gal/yr spirit
-  >100k beer or >10k spirit
-  >10k beer or >1k spirit
-  >1k beer or >100 spirit



Source: Washington State Energy Office



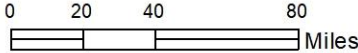
# ...and plenty of food processors



## Food Processors

- High sales volume or employment (high energy value)
- Medium sales volume or employment

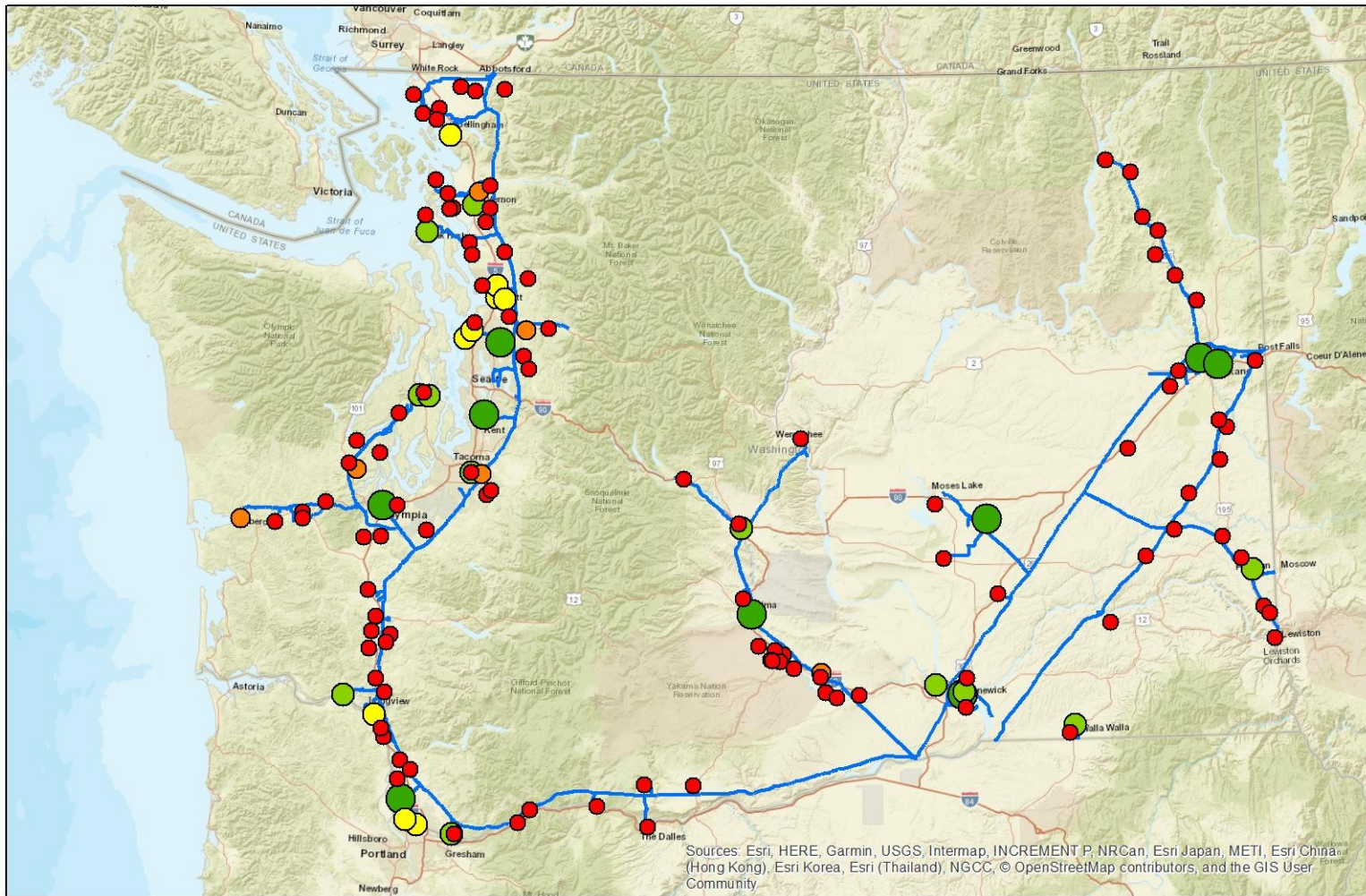
● Other processors



Source: Washington State Energy Office



# Facilities start with wastewater...



## Wastewater Treatment Facilities



Digester, >100 scfm and/or biogas capture



Digester, 30-100 scfm



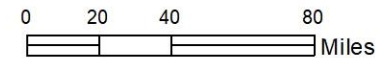
No digester, >30 scfm



Digester, 10-30 scfm



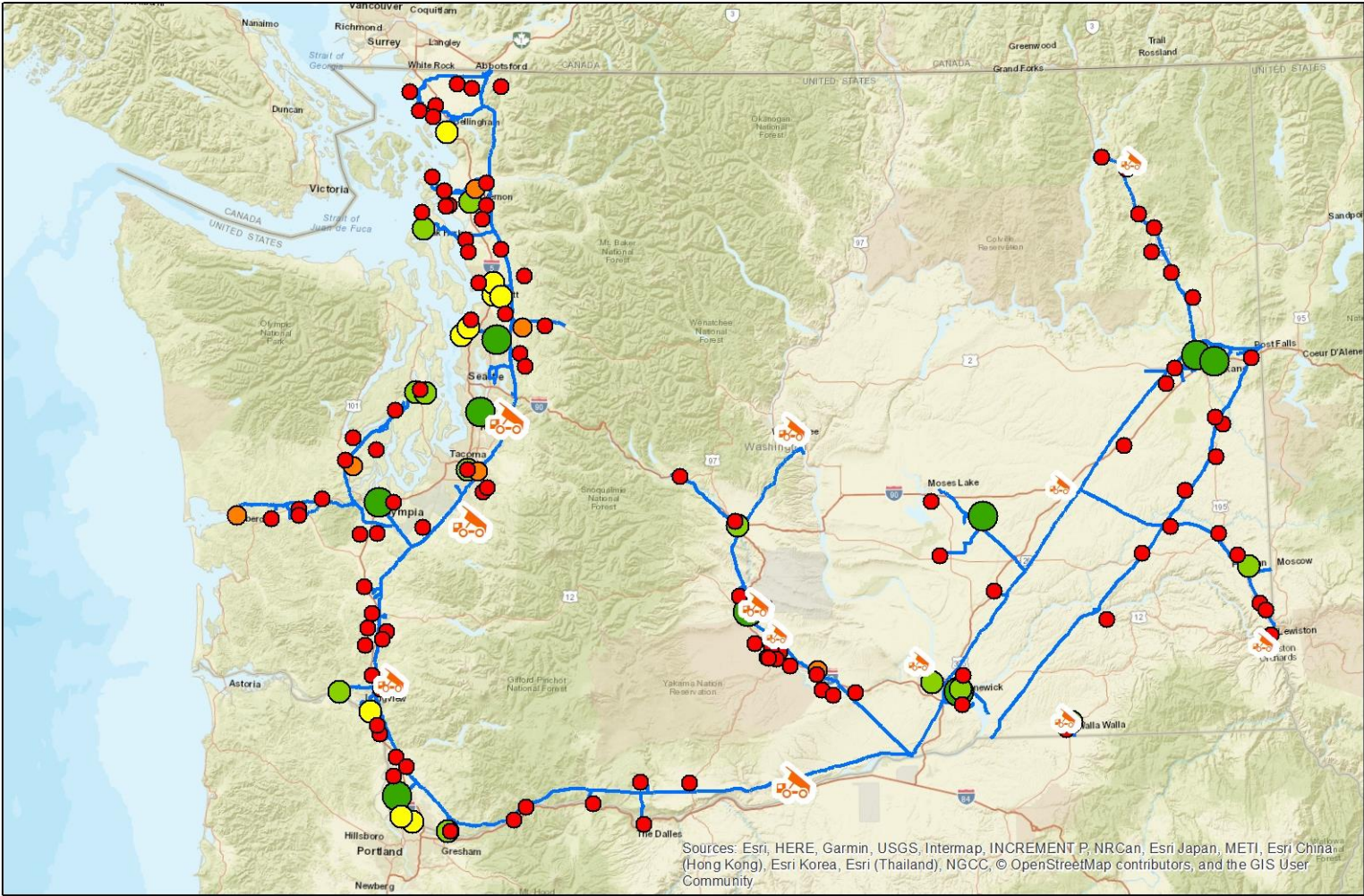
Others



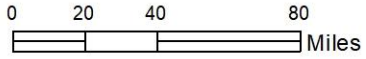
Source: Washington State Energy Office



# ...add open landfills...



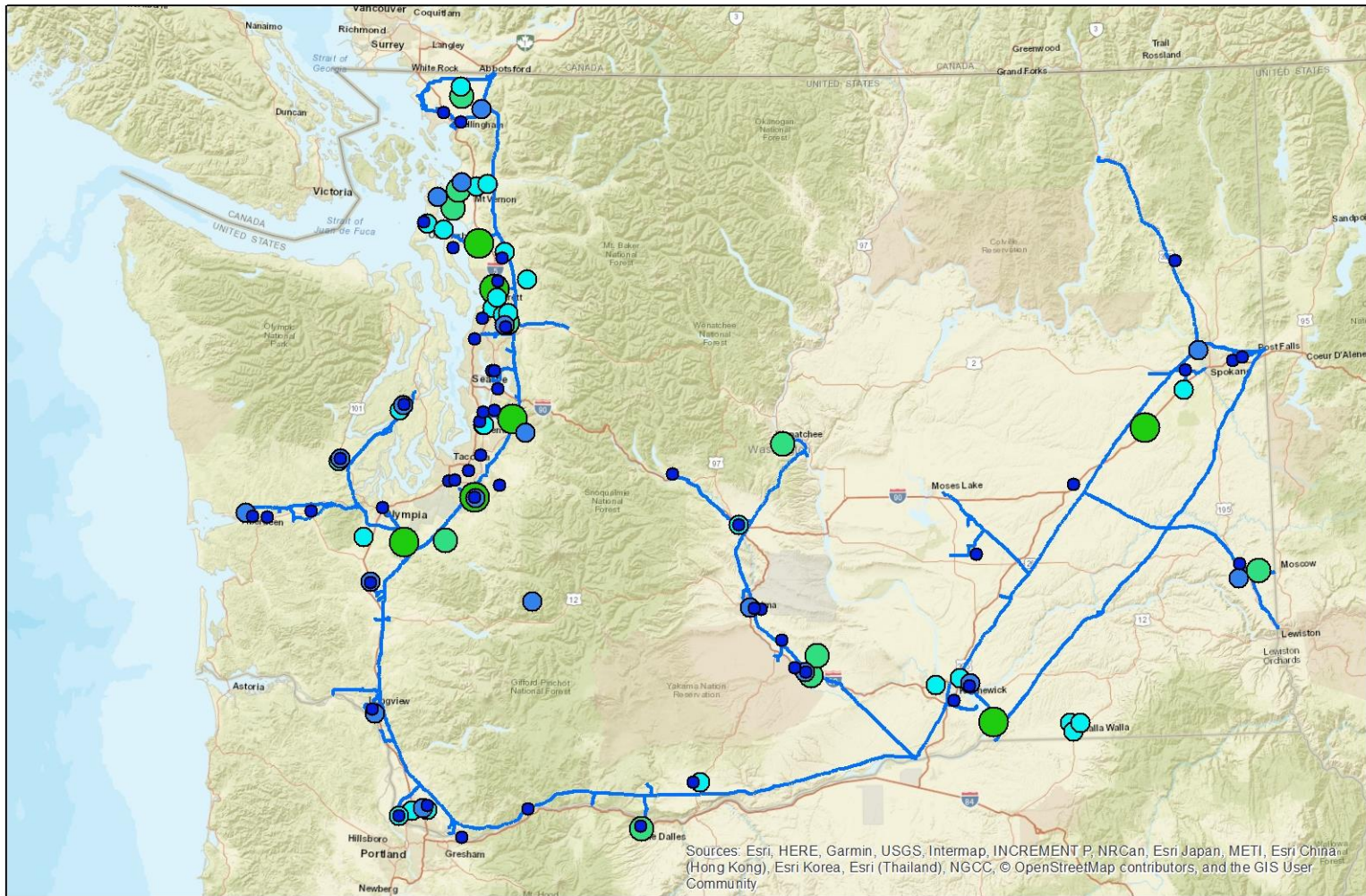
- Open Landfills**
- >1,000 scfm
- >300 scfm
- <300 scfm



Source: Washington State Energy Office



# ...and composters, other public infrastructure



## Other Infrastructure



Compost (>50k tons/yr)



Compost (>10k tons/yr)



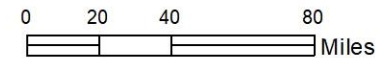
Compost (<10k tons/yr)



Closed Landfill



Transfer Station



Source: Washington State Energy Office



# *New Initiatives*

- **Clean Energy Fund Dairy Digester Grants**
- **Natural Gas Conservation Standard:** Gas utilities identify and acquire all available and cost-effective measures; UTC to establish targets by 2022
- **RNG Programs:** Utilities may propose RNG program for compliance, must offer voluntary RNG service for retail customers
- **Public Preferential Purchasing:** RNG and nutrients



# *Future Opportunities*

- **Low-Carbon Fuel Standard: State vs Puget Sound**
- **State-level Pipeline Quality Standards**
- **Food Waste/Wasted Food Reduction: Study & Plan**
- **Industrial Symbiosis Assessment**
- **Sustainable Farms & Fields**
- **WSU Soil Health Initiative**
- **NEWT: Nutrient, Energy & Water Technologies**





## Department of Commerce

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