

Sloan Foundation Workshop on Natural Gas in Transportation

Potential of Renewable Natural Gas

Dr. Nathan Parker

School of Geographical Sciences and Urban Planning

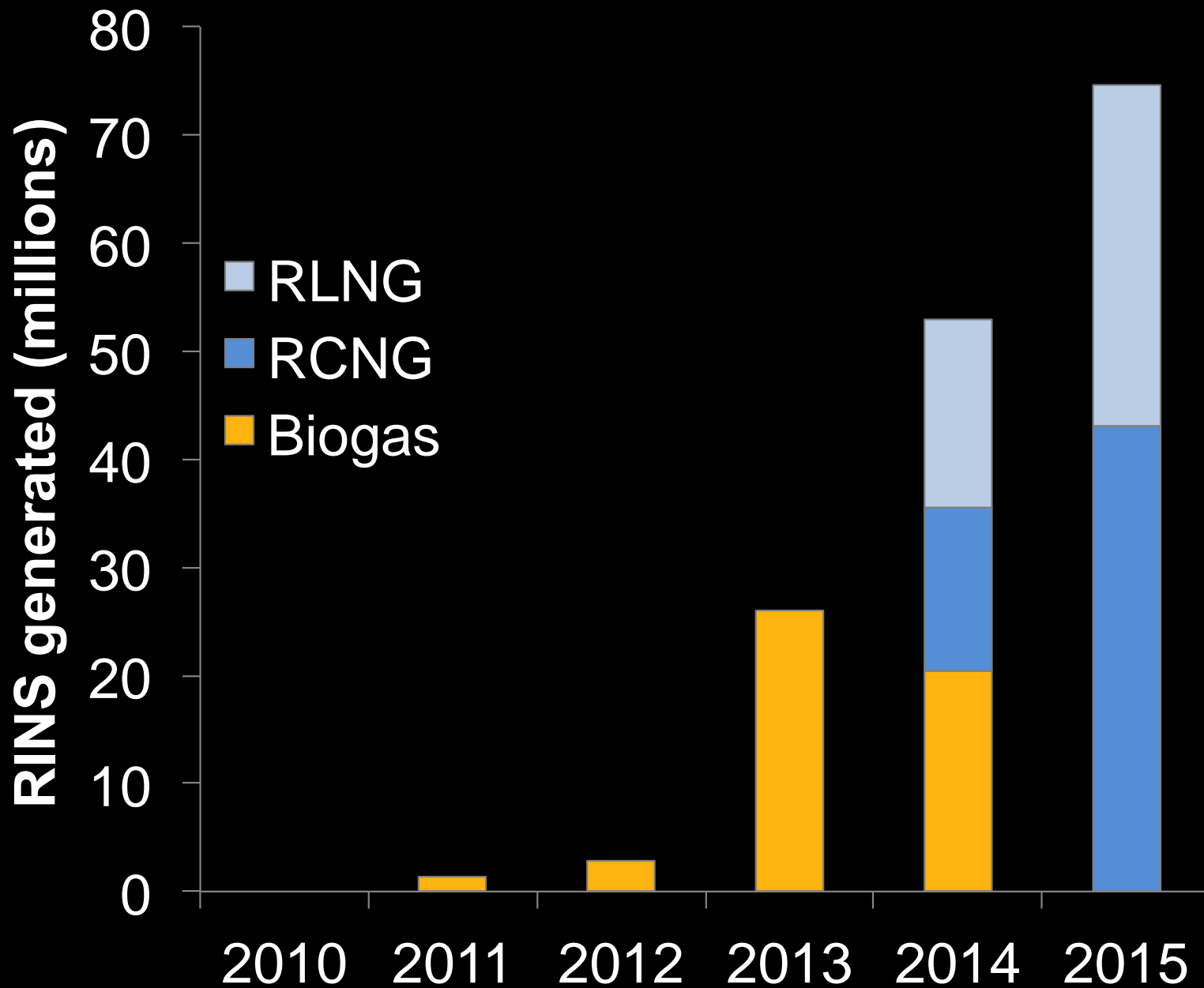
Arizona State University

Significant gross potential

Large distribution on economic potential

Co-products/benefits are important to improve economics

Recent growth in RNG



**part I: Gross Potential
for RNG**



Animal manures



Waste water biogas



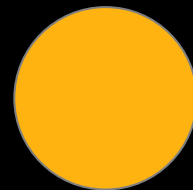
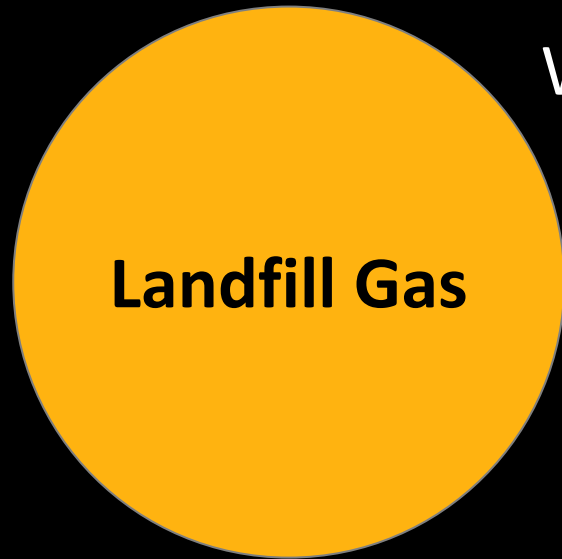
Food & green waste



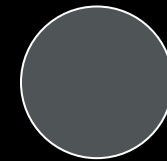
Landfill gas

Gross RNG Potential in U.S.A.

740 BCF/yr
RNG potential



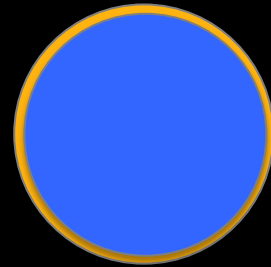
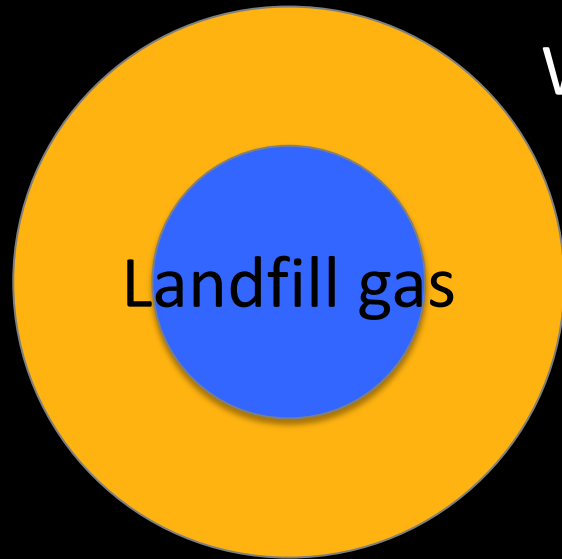
2014 natural gas
consumption in
transportation =
35 BCF



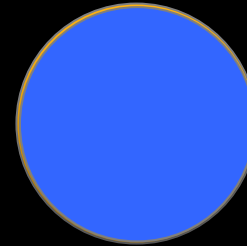
Source: NREL (2014) Renewable Hydrogen Potential from Biogas in the United States. NREL/TP-5400-60283.

Available U.S. RNG Potential

290 BCF/yr
RNG available



Waste Water
Biogas

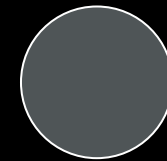


Manure



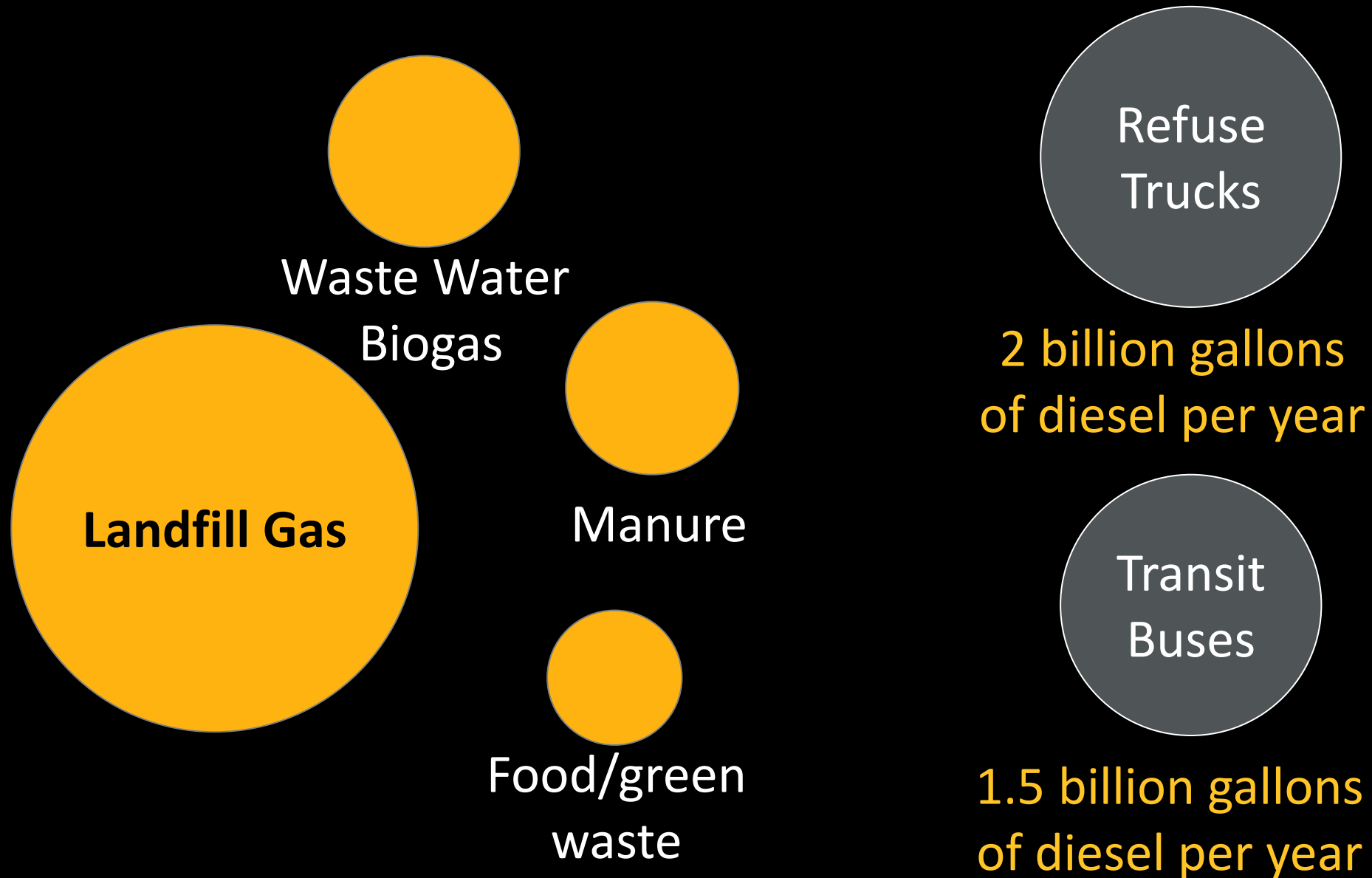
Food/green
waste

2014 natural gas
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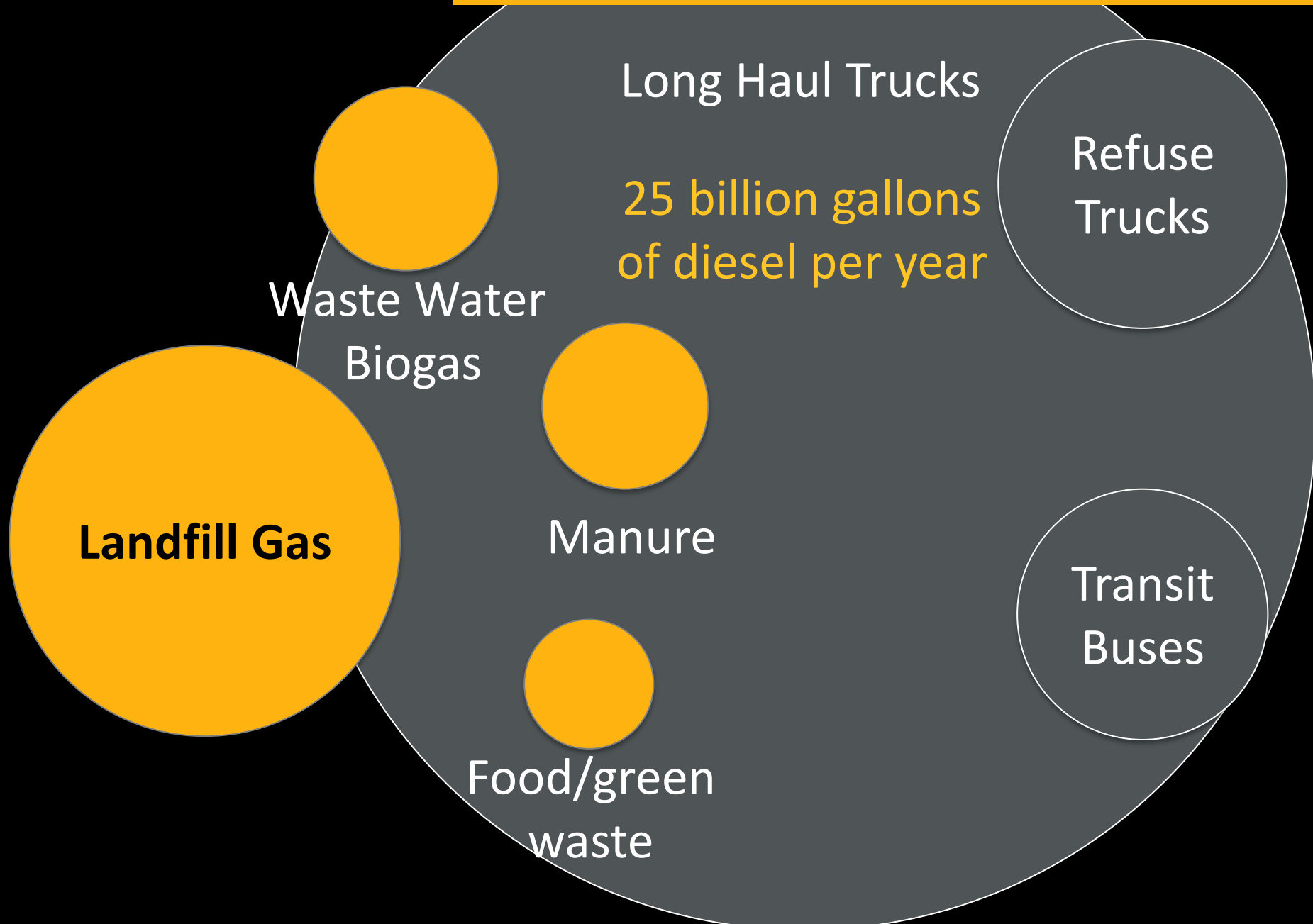


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RNG Potential in U.S.A.



RNG Potential in U.S.A.



Long Haul Trucks

25 billion gallons
of diesel per year

Refuse
Trucks

Waste Water
Biogas



Manure

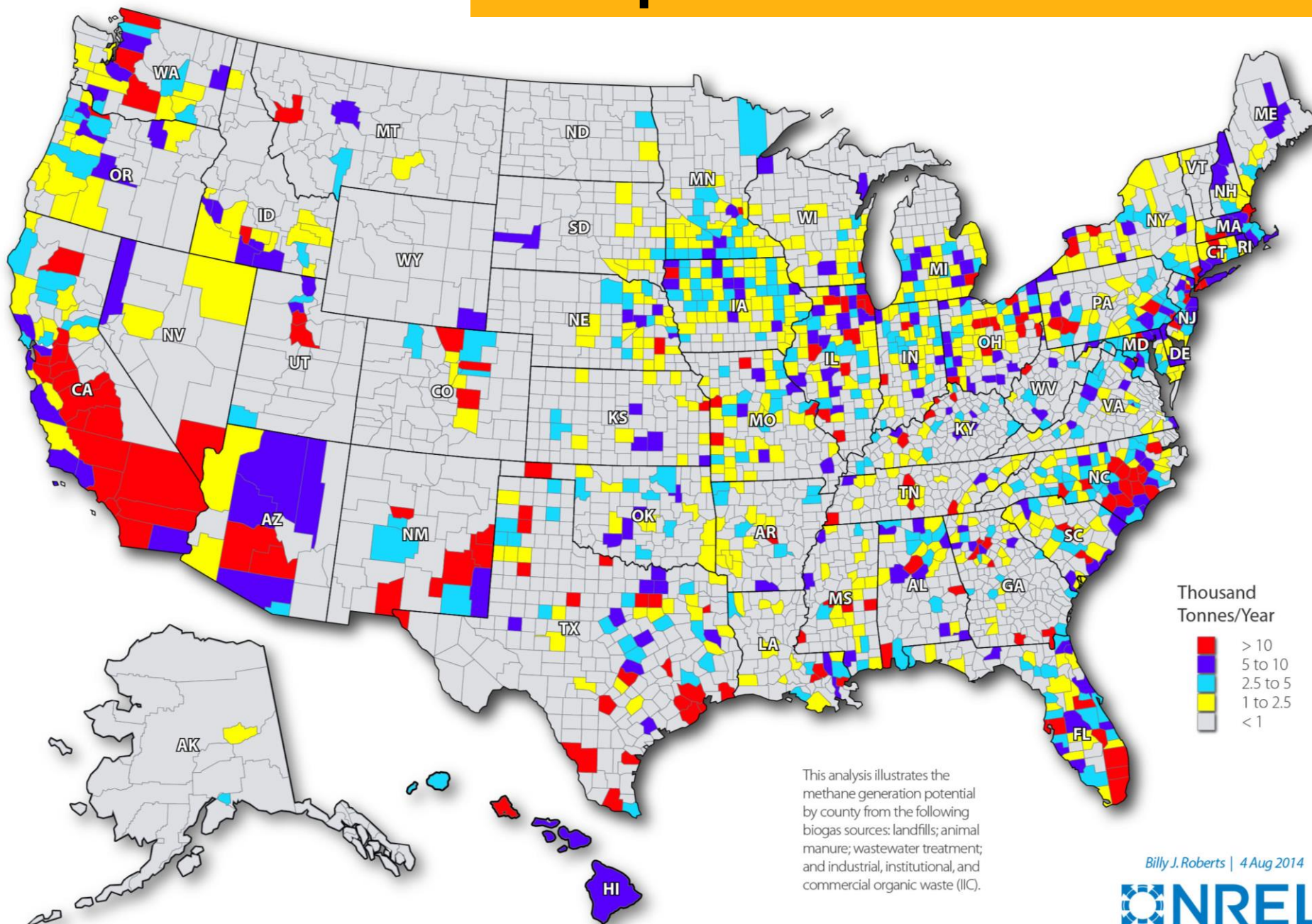
Transit
Buses

Landfill Gas



Food/green
waste

RNG potential across U.S.A.



Billy J. Roberts | 4 Aug 2014

part II: **Economic potential**

Factors in Economic Potential

Size of resources

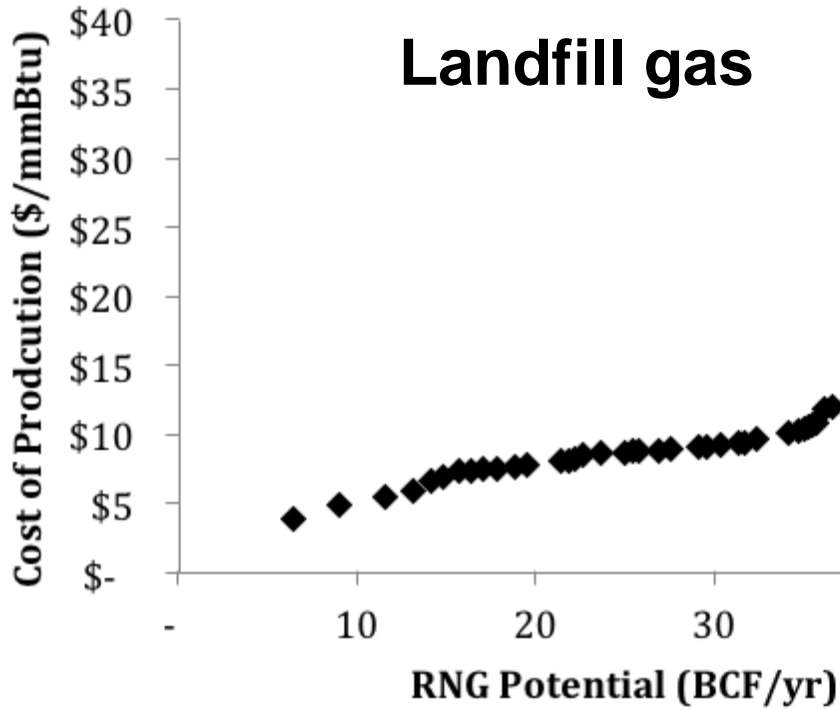
Distance to infrastructure

Local value of co-products/benefits

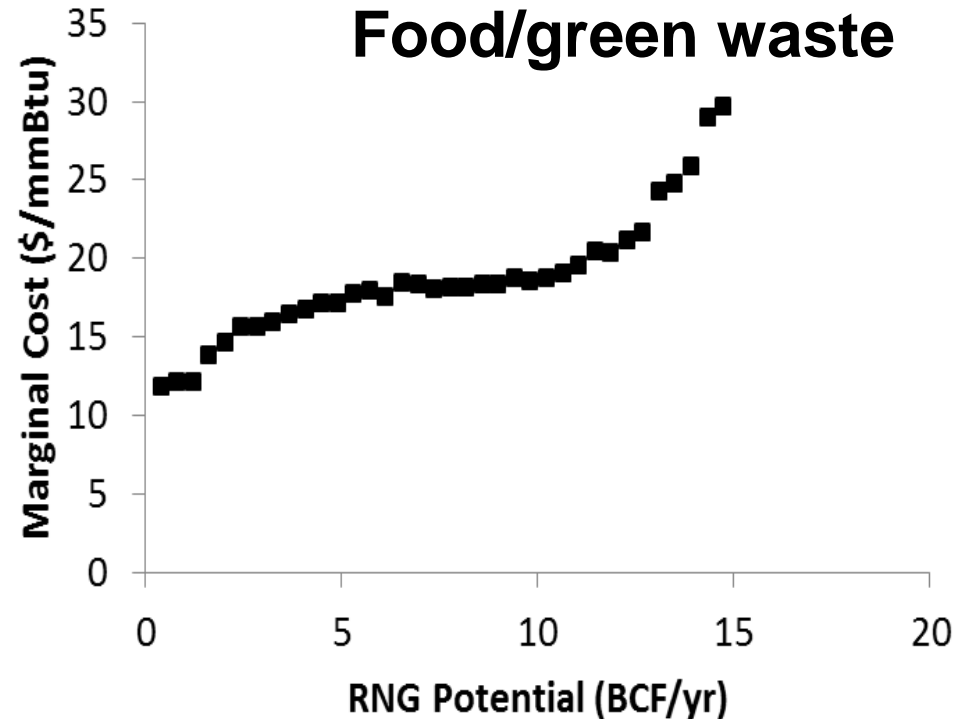
Quality requirements

California RNG Supply Curves

Landfill gas

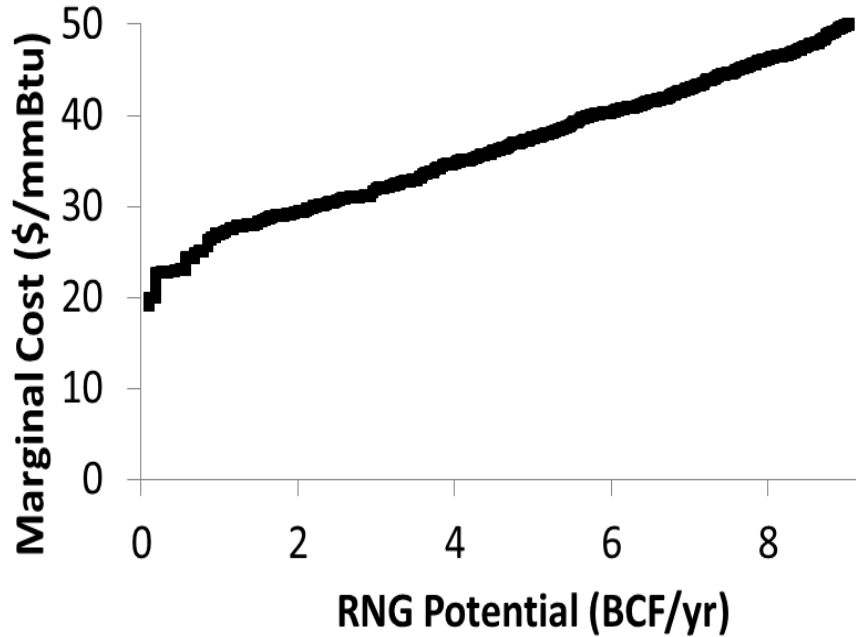


Food/green waste

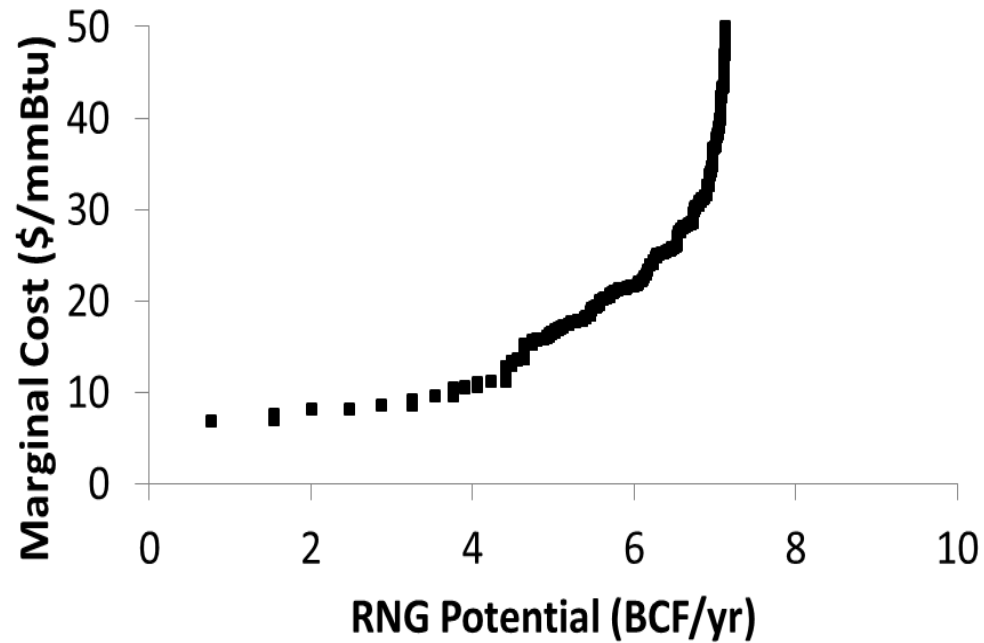


California RNG Supply Curves

Animal manure



Waste water biogas



RNG can be produced as part of waste management schemes.

RNG resource potential in the United States is roughly **20%** of long haul truck demand.

In California, **25%** of the gross resource were estimated to be available below \$10/mmBtu.

Questions/Comments
ncparker@asu.edu