



Renewable Fuels: Can the Portfolio Expand?

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Policies Affecting Renewable Energy

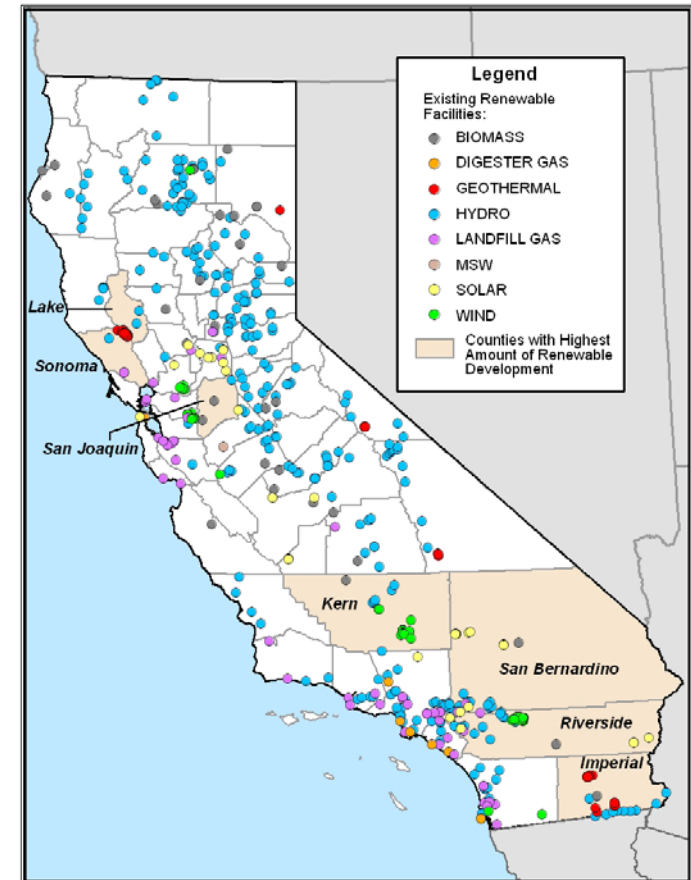


- AB 32: 2020 and 2050 GHG emission reduction targets
- RPS: 33% renewable electricity by 2020
- Governor: 8,000 MW new utility-scale and 12,000 MW DG renewables by 2020
- CSI: 3,000 MW new distributed solar end of 2016
- Alternative Fuels Plan: Alternative transportation fuel use 11% of consumption by 2017 and 26% by 2022
- LCFS: Reduce carbon intensity of transportation fuels 10% by 2020
- Governor: 1.5M ZEVs by 2025



Statewide Renewable Status - Electricity

- California 22% renewable in 2012; 2013 likely higher
- 17,650 MW renewable capacity; additional 2,800 MW possible this year
- ~\$200M awarded to date for renewable R&D (PIER); additional R&D funds available through Electric Program Investment Charge





Statewide Renewable Status - Transportation

- California uses 20B gallons/year of fuel; alternative and renewable fuels about 8%
- Alternative and Renewable Fuel and Vehicle Technology Program support
 - \$100M/year through 2024
 - \$400M awarded to date, \$127M for biofuels projects
 - Biogas, conventional and cellulosic ethanol, biodiesel, renewable diesel
 - Feedstocks include municipal waste streams, dairies and feedlots, sweet sorghum and sugar beets



Outlook for Expanded Portfolio

- Could need 150-600MW of new renewables annually to maintain 33% given expected electricity demand growth (1.15%/year next 10 years)
- Governor Brown: 33% floor, not ceiling
- Renewables key to decarbonizing electricity sector
- CPUC can require higher than 33% for IOUs
- Voluntary 100% renewable programs in some cities
- Potential increased demand from high speed rail
- Transportation electrification
- Significant increase in alternative transportation fuel use by 2020

Renewables in San Joaquin Valley



- >4GW installed - 23% of statewide capacity
- ~4,000 MW with environmental permits
- >400MW capacity contracted under renewable FIT; more to come under SB 1122
- \$13 M in renewable electricity R&D funding; \$43M in transportation R&D funding





CEC Policy Recommendations

- CEC's 2012 Integrated Energy Policy Report Update
 - State should identify priority geographic areas for renewable development with initial focus on Central Valley
 - Procurement should consider full suite of benefits from renewables and require investment in disadvantaged communities
 - Align workforce training to renewable industry needs

Biomass in the Valley



- 300MW operating electricity generating capacity
- Technical potential for additional 1,200 MW

County	Total Bioenergy Potential MW	<i>Biosolids and Landfilled Biomass</i>	<i>Dairy manure</i>	<i>Other Animal Manure</i>	<i>Orchard and Crop</i>	<i>Food Processing</i>	<i>Forestry</i>
Fresno	250	40	10	20	110	20	50
Kern	200	40	20	10	70	20	50
Kings	70	10	20	10	30	10	0
Madera	110	10	10	10	40	10	40
Merced	110	10	30	20	30	30	0
San Joaquin	140	40	10	10	60	30	0
Stanislaus	110	30	20	10	30	30	0
Tulare	200	20	50	20	60	10	40
Total	1,180	190	160	90	420	140	180

Source: California Biomass Collaborative Biomass Resource Assessment.

<http://128.120.151.3/biomass/files/2013/09/09-20-2013-An-Assessment-of-Biomass.pdf>



Thank You!

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