

Progress Toward Meeting the State's Bioenergy Goals

2010 Bioenergy Action Plan Workshop
California Energy Commission

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Bioenergy Goals

- **Policy Drivers:**

- Climate Change
- Renewable Portfolio Standard
- Low Carbon Fuel Standard
- IEPR

- **Governor's Exec Order S-06-06**

- 20% of the RPS by 2010 and 2020
 - 3,300 GWh additional biopower generation by 2010¹
 - 10,000 – 13,000 GWh additional biopower generation by 2020¹
- In-state prod. biofuels: 20% by 2010; 40% by 2020
 - Additional 150 million GPY by 2010²
 - Additional 550 million GPY by 2020²

1. Source: California Energy Commission. Estimates assume the utilities will meet 20% RPS target by 2012 and 33% RPS target by 2020.
2. Source: Orta, Jason, Zhiqin Zhang, and et. al. 2010. *2009 Progress to Plan - Bioenergy Action Plan for California*. California Energy Commission. CEC-500-2010-007.



How can we meet near-term goals?

Potential	# of sites	Capacity
Idle capacity (Does not include curtailments)		
Idle biomass	10	>100 MW
Idle dairy digester	7	2 MW
Idle Ethanol	5	239 MGPY
Idle Biodiesel	6	62 MGPY
Expanding role of existing resources		
Existing biomass	30	Unknown
Coal co-fire (5-50%)	8	15-150 MW
LFG/WWTP Flaring	Unknown	Unknown
Co-digestion	-	>200 MW
Other		
On line in 2010	2	29 MW
Self Gen (TRECs)	-	~100 MW
New contracts	21	150 MW

Source: California Energy Commission
MGPY = million gallons per year

- Near-term focus area:
 - Restart idle capacity.
 - Expand role of existing resources.
 - Increase capacity at existing facilities.
 - Co-fire or fuel switch at existing Coal facilities.
 - Co-digest food waste at existing digesters.
 - New contracted projects.

How can we meet long-term goals?

Potential	Capacity
Feedstock technical potential¹	
Forestry	2,380 MW
Ag and food processing	1,390 MW
Non-fossil LF waste	1,320 MW
WWTP	90 MW
LF gas	590 MW
Mixed fuel potential	
Coal full fuel switch (50-100%)	Additional 150 MW ²
Co-digestion	Additional 140 MW ³

- Long-term focus:
 - Siting and permitting new biopower and biofuel facilities.
 - Commercialization of emerging technologies.
 - Promoting the efficient and cost effective use of biomass resources by developing mixed-use and mixed-fuel bioenergy facilities.

1. Williams, Robert. 2008. *An Assessment of Biomass Resources in California, 2007*. California Biomass Collaborative.
2. *California Energy Commission*
3. Kulkarni, Pramod. 2009. *Combined Heat and Power Potential at the California Wastewater Treatment Plants*. California Energy Commission. CEC-200-2009-014-SF.

Barriers to increased bioenergy development in CA

1. Regulatory/Permitting: timeliness, uncertainty, and cost.
2. Cost to meet standards for pipeline gas quality and air emissions.
3. Inability to obtain project financing.
4. Feedstock sourcing: cost, competition, and sustainability.
5. Need for commercialization of emerging technologies.



2010 Bioenergy Action Plan

Strategies to address barriers

1. Address regulatory and permitting issues to improve timeliness and reduce uncertainty and cost.
2. Continue research and development of low emission bioenergy technologies and develop policy mechanisms that accurately account for GHG benefits associated with each technology.
3. Facilitate ability of project developers to obtain project financing and identify funding opportunities.
4. Increase the availability of affordable biomass products collected through sustainable practices and address issues related to collection and transportation of biomass feedstock.
5. Support research and development efforts that promote the commercialization of efficient bioenergy technologies that meet California's regulatory standards.



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