

# North America Renewable Power Advisory

6 April 2016

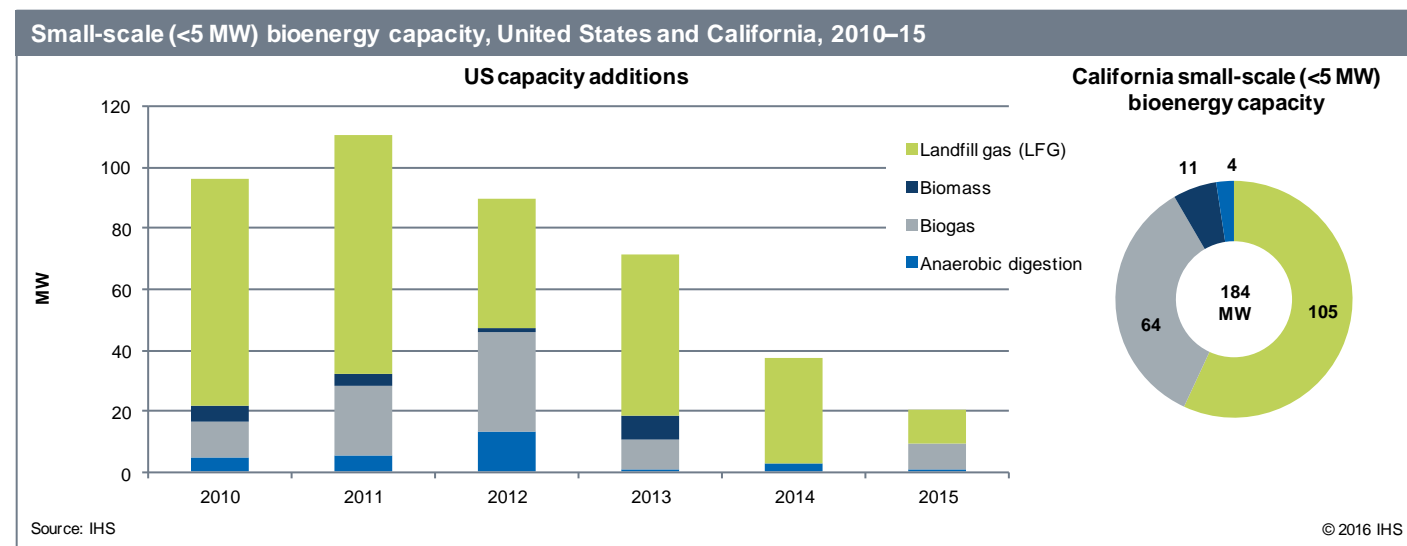
ihs.com

## Bioenergy Incentives to Add Diversity to California Renewables

Michelle Davis, Research Analyst

### Industry development

On 1 February 2016, Period 1 of California's Bioenergy Market Adjusting Tariff (BioMAT) program began. The program requires California's investor-owned utilities to procure a combined 250 MW from bioenergy projects less than 3 MW in size that are eligible for the renewable portfolio standard (RPS) and that began operation on or after 1 June 2013. The standard feed-in tariff starts at US\$127.72/MWh and adjusts based on prices bid into the program each bimonthly period. Thus far, Pacific Gas and Electric Company (PG&E) and San Diego Gas & Electric (SDG&E) have not received any bids and Southern California Edison (SCE) has reported one bid for Period 1 of the program, which ended 31 March 2016. The program comes on the heels of the 7 October 2015 legislation to expand California's RPS from 33% by 2020 to 50% by 2030.



### IHS Energy insights

**California seeks bidders to triple small-scale bioenergy capacity.** While LFG generators currently dominate the small-scale (less than 5 MW) US bioenergy market (accounting for two-thirds of capacity), California is attempting to expand the capacity of other types of bioenergy projects. This is evident from the specific technology categories mandated in the program: biogas from wastewater treatment, municipal organic waste, or food processing (110 MW); dairy and other agricultural bioenergy (90 MW); and bioenergy using by-products from sustainable forestry (50 MW). Given that there are less than 100 MW of small-scale bioenergy projects in California (excluding LFG), this new mandate dramatically increases the market for these types of projects. With its 50% RPS target, California is aiming to

#### Contacts

Michelle Davis, Research Analyst  
Michelle.Davis@ihs.com

IHS™ ENERGY

COPYRIGHT NOTICE AND DISCLAIMER © 2016 IHS. For internal use of IHS clients only.

No portion of this report may be reproduced, reused, or otherwise distributed in any form without prior written consent, with the exception of any internal client distribution as may be permitted in the license agreement between client and IHS. Content reproduced or redistributed with IHS permission must display IHS legal notices and attributions of authorship. The information contained herein is from sources considered reliable, but its accuracy and completeness are not warranted, nor are the opinions and analyses that are based upon it, and to the extent permitted by law, IHS shall not be liable for any errors or omissions or any loss, damage, or expense incurred by reliance on information or any statement contained herein. In particular, please note that no representation or warranty is given as to the achievement or reasonableness of, and no reliance should be placed on, any projections, forecasts, estimates, or assumptions, and, due to various risks and uncertainties, actual events and results may differ materially from forecasts and statements of belief noted herein. This report is not to be construed as legal or financial advice, and use of or reliance on any information in this publication is entirely at client's own risk. IHS and the IHS logo are trademarks of IHS.



increase the diversity of its renewables portfolio. Driven by substantial cost declines in the past several years, solar photovoltaic (PV) projects have dominated recent renewables procurement in California; since 2011, 63% of procured generation from the state's five largest utilities has been solar PV, 20% has been wind, and 17% has been all other types of eligible renewables (see the IHS Energy On Point [California Charges Ahead with 50% Renewable Energy](#)).

**BioMAT incentives will favor existing developers and municipal utility districts, but only if the tariff increases.** The current competitive landscape for small-scale bioenergy projects in California is diverse. Excluding LFG, roughly 30 different owners account for about 80 MW of capacity. For small-scale bioenergy projects, municipal utility districts and small farmers typically contract with private developers to install projects, with a smaller portion of the market being made up of third-party-owned projects. The BioMAT program will generally favor municipal utility districts that do not already have power projects at their wastewater treatment or solid waste facilities. Biogas projects from wastewater treatment are one of the least expensive options in the BioMAT program since producing power at these facilities usually requires little more than installing a generator. (The other program categories require significantly more investment and development just to process the feedstock for the fuel.) Developers like Anaergia, Waste Management, Sierra Pacific Industries, and American Biogas Electric Co., which already own and operate anaerobic digesters and biogas projects in California, are best positioned to take advantage of the BioMAT program and seek opportunities to work with municipal utility districts. But the results of the first Program Period indicate this will be difficult at the current tariff of \$127.72/MWh. This price can work for larger-scale biomass projects but is generally too low for projects below the program's 3 MW limit. The minimal bids in Period 1 indicate the California Public Utilities Commission will likely need to raise the tariff or consider increasing the allowable project size in order to fulfill the entire 250 MW of capacity mandated under the program.

#### Allocation of bioenergy capacity for BioMAT program by technology

BioMAT technology category	PG&E	SCE	SDG&E	Mandated total
<b>Category 1: Various biogas</b> Fuel from wastewater treatment facilities, organic solid wastes diverted from landfills or by-products of food processing, and anaerobic digestion of biodegradable substrates	30.5	55.5	24	110
<b>Category 2: Dairy and agricultural bioenergy</b> Fuel from anaerobic digestion of dairy waste, biogas, or biomass from agricultural activities	33.5	56.5	0	90
<b>Category 3: Forest management</b> Fuel from sustainable forest management, fuel reduction activities, or infrastructure clearance activities	47	2.5	0.5	50
<b>Total</b>	<b>111</b>	<b>114.5</b>	<b>24.5</b>	<b>250</b>

Source: IHS, California Decision Implementing Senate Bill 1122

© 2016 IHS

**Demand for bioenergy projects remains driven by local policy incentives.** Because bioenergy projects are higher in cost on a levelized price of energy basis than other types of renewables, policy incentives—such as those in California—are crucial to project viability. Recent power purchase agreement (PPA) prices for biomass power plants and LFG projects have ranged from US\$80/MWh to US\$120/MWh after the effects of tax credits, and smaller bioenergy projects require even higher prices, as the minimal amount of bids for Program Period 1 demonstrates. By comparison, wind PPAs range from US\$20/MWh to US\$60/MWh and solar PPAs range from US\$30/MWh to US\$80/MWh. And despite a recent two-year extension of the federal Production Tax Credit, open-loop biomass projects (projects that use waste plant material) and LFG projects receive only US\$12/MWh compared with US\$23/MWh for wind and geothermal projects. Unless specific local policy incentives are in place or other local factors lead to project viability, utilities will typically have to pay a substantial premium for power from bioenergy projects, a prospect that is difficult to justify in the current power market environment.