



ENVIRONMENTAL
ENTREPRENEURS

Advanced Biofuel Market Report

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- Measure economic activities of advanced biofuels
- Focus on fuels with CI that is one quarter of gasoline/diesel
- Based on publicly available data including
 - EPA
 - Press statements
 - Company quotes
 - Investment groups
 - CEC data
- Interviews with investors, companies, distributors, legal advisors
- Collected data for 2011 and company forecasts for 2015

Meeting LCFS Exclusively Through Advanced Biofuels



- 2015 – would require 600 million gallons
- 2020 – would require 2.4 billion gallons
- Questions:
 - How much capacity could be produced that could be delivered to California?
 - How much of that capacity will California attract?

Currently Active Companies



ACTIVE ADVANCED BIOFUEL COMPANIES 2011		
FUEL TYPE	COMPANIES	MILLION GAL
Ethanol - Cellulosic	40	7.45
Biodiesel (Non-Soy)	160	350.00*
Diesel - Renewable	13	77.69
Gasoline - Renewable	7	0.13
Multiple Renewable (Gasoline, Diesel)	14	0.74
Other (Biobutanol, Biomethane, Syngas)	6	1.01
TOTAL	240	437.03
<i>*Capacity much greater, at 2.1 billion gallons</i>		
SUPPLY CHAIN COMPANIES		
Feedstock Producers	31	
Enzymes/Chemicals	17	
Related Tech	20	

Production Projections for 2015



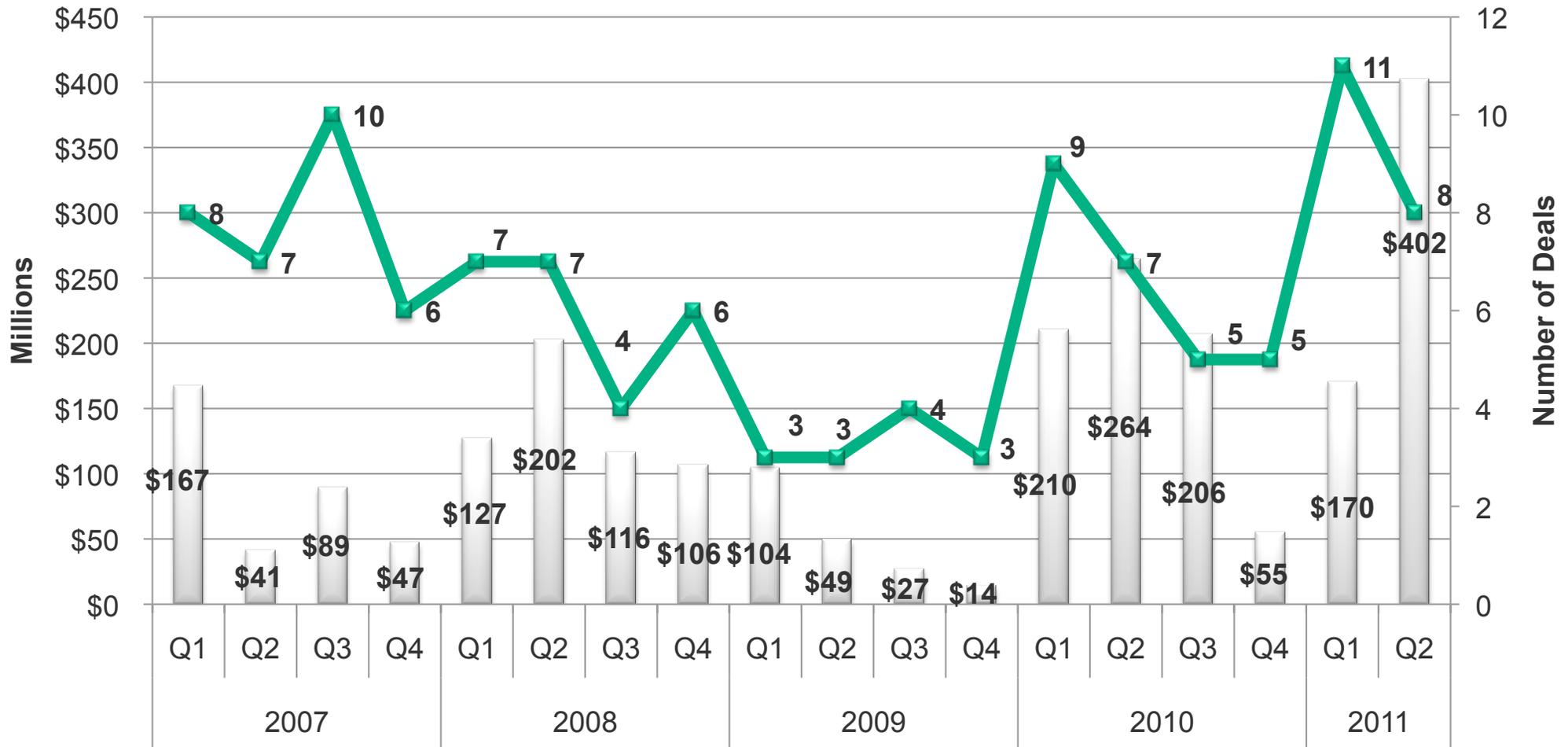
INDUSTRY PRODUCTION ESTIMATES (MGPY)		
FUEL TYPE	2011	2015
Ethanol - Cellulosic	7.45	539.14
Biodiesel (Non-Soy)	350.00	575.00*
Diesel - Renewable	77.69	525.84
Gasoline - Renewable	0.13	157.83
Multiple Renewable (Gasoline, Diesel)	0.74	875.68
Other (Biobutanol, Biomethane, Syngas)	1.01	510.98
TOTAL	437.03	3,184.47

**Estimate based on RFS2 incremental increases*

Private Equity Investment



North American Advanced Biofuel Private Equity Investment





- Shift from technology to production risk
- Fuels are likely to be produced outside of California
- Drop-in fuels will be the main source of advanced biofuels
- Need to enable “willing participants” and not depend completely on “obligated parties”
- Off-take agreements can accelerate market
- Transparent credit trading market is essential
- LCFS and RFS2 are stimulating investor interest