

# **Asia Biomass Conference**

15 December 2005

Pornvilai plant

Market Development of Biofuels in Thailand

**Mr. Burin Sukphisal**

**The Renewable Energy Committee  
Thai Parliament**

# Organizational Structure

## National Energy Policy Committee

# Chairman : Prime Minister  
# Secretary : DG of EPPO

## The Bio-Fuels Development & Promotion Committee

# Chairman : Mr.Pinij Jarusombat  
# Secretary : DG of DEDE

### Subcommittee on Bio-Diesel

# Chairman : Dr.Pornchai Rujiprapa  
(Ministry of Energy)  
# Secretary : Mr.Prapon Vongtareui  
(DEDE)

### Subcommittee on Ethanol

# Chairman : Prof.Dr.Chareinsak Rojanaridpiched  
(Kasetsart University)  
# Secretary : Dr.Nattapon Nattasomboon  
(OIE)

# Current Status of Bio-Diesel

- @ B5 by 2011 (4.25 M.litres/day of Ester)
- @ B10 by 2012 (8.5 M.litres/day of Ester)
- @ B5 Specification
- @ Specification for Ester
- @ Tax Incentive
- @ Palm Oil Plantation
- @ Pilot Projects

# Bio-Diesel Policy

2005	2006	2007	2008	2009	2010	2011	2012
Bio-Diesel for Community	B5 Bangkok and some Southern Provinces			B5 Nation-wide			B10 Nation-wide

# Bio-Diesel Action Plan

	2005	2006	2007	2008	2009	2010	2011	2012
<b>Plantation</b> (M.rai/year)	0.26	0.60	0.67	1.07	1.40			
<b>Esters</b> (M.litres/day)	0.03	0.06	0.36	0.46	0.76	1.76	3.96	8.50
<b>Bio-Diesel</b> (M.litres/day)	0.60	1.20	7.00	9.00	15.00	35.00	79.00	85.00
	Bio-Diesel for Community		B5					B10

# Bio-Diesel for Community (2005-2006)

<b>Provinces</b>	<b>Bio-Diesel Capacity (litres/day)</b>
- Bangkok	20,000
- Nakornrachasima	7,000
- Chiangmai, Cholburi	5,000
- Samutprakarn, Nontaburi, Khonkaen, Udontani, Chiangrai, Ubonratchatani, Nakornsriphamaraj	28,000
<b>Total 11 provinces</b>	<b>60,000</b>

# Bio-Diesel for Commercial (2007-2012)

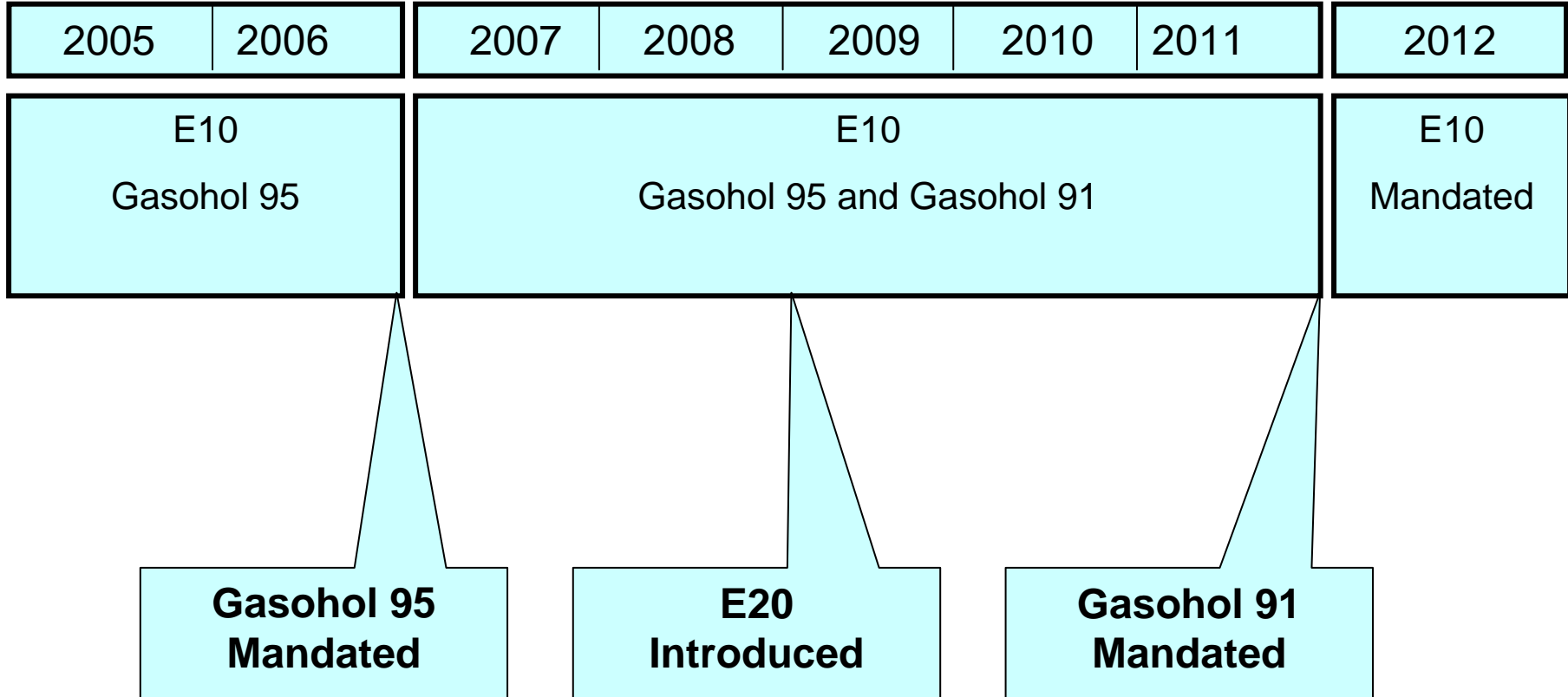
	2007	2008	2009	2010	2011	2012
<b>Bio-Diesel Plants*</b>	3	4	7	17	39	85
<b>Bio-Diesel Capacity</b> (M.litres/day)	0.36	0.46	0.76	1.76	3.96	8.50

\* Based on a capacity of 100,000 litres/day/plant

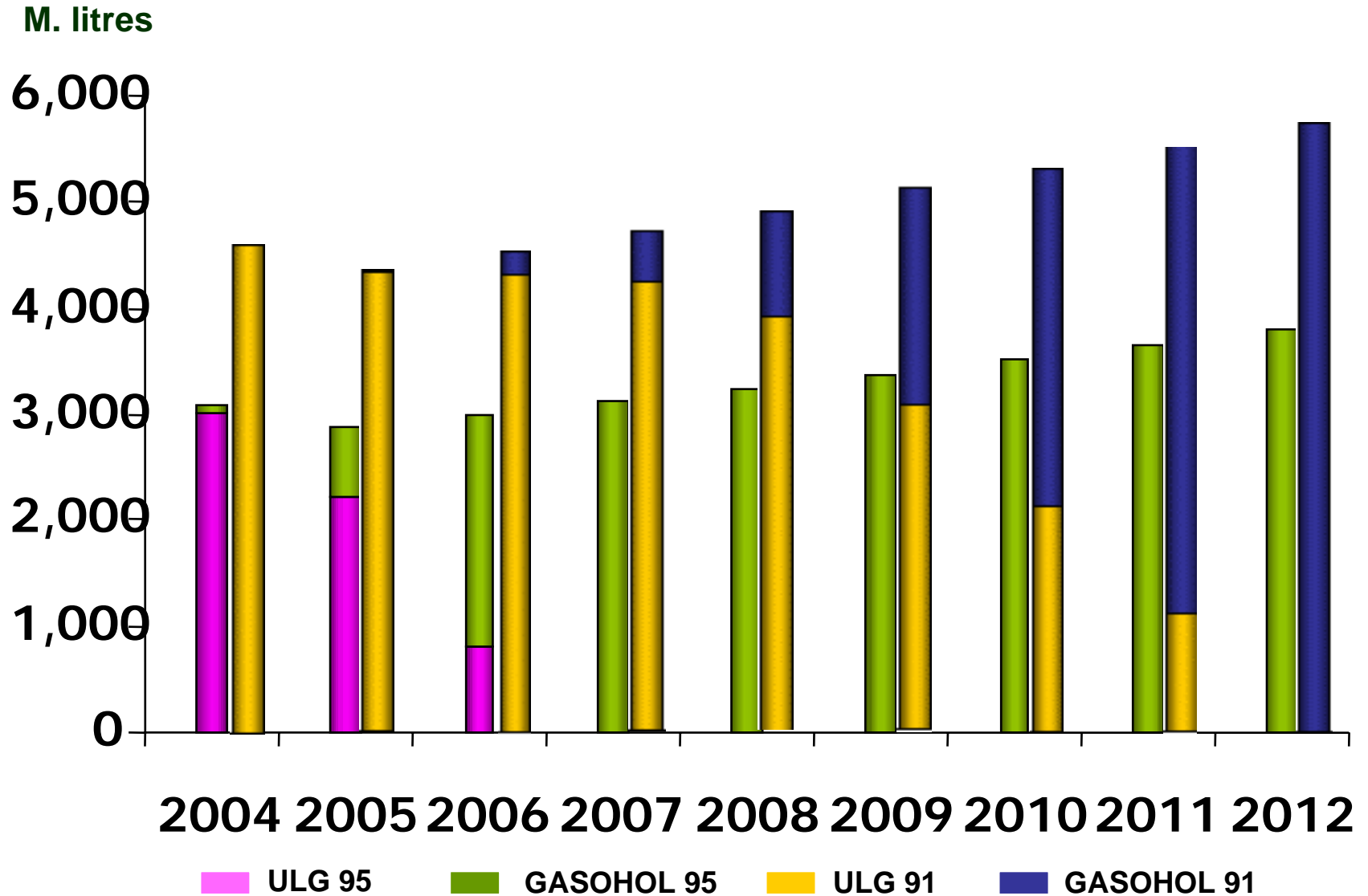
# Current Status of Gasohol

- @ Gasohol 95 (E10) by 2006 (1 M.litres/day of Ethanol)
- @ Gasohol 91 (E10) by 2011 (2 M.litres/day of Ethanol)
- @ New Gasohol Specification
- @ Specification for Base Oil and Fuel Ethanol
- @ Additional Tax Incentive
- @ Increased Number of Gas Stations
- @ Price Formula for Ethanol
- @ Progress of Ethanol Projects

# Ethanol Policy



# Sale of Gasoline

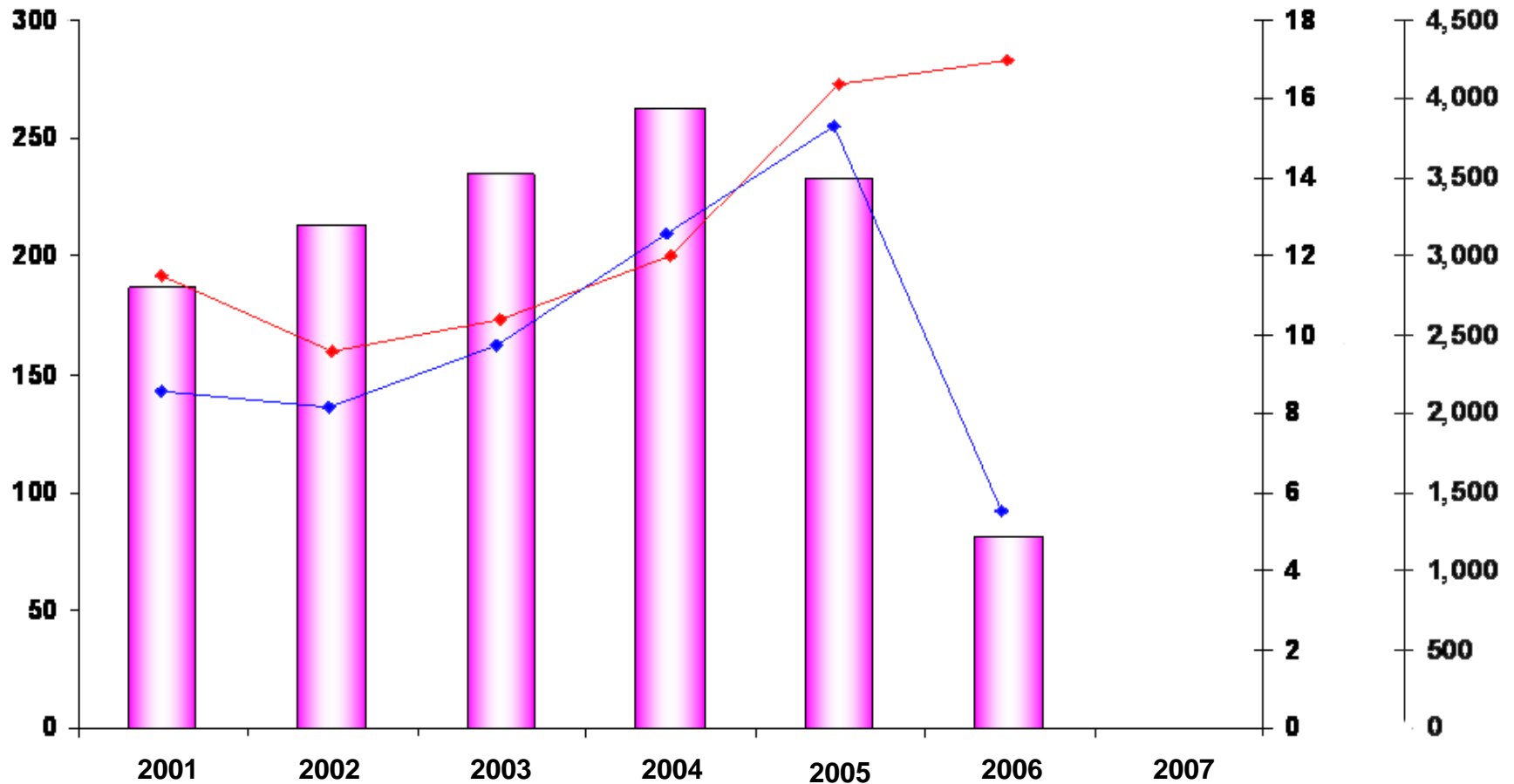


# MTBE Import

Quantity  
(M. Litres)

Unit Price  
(baht/litre)

Value  
(M. baht)



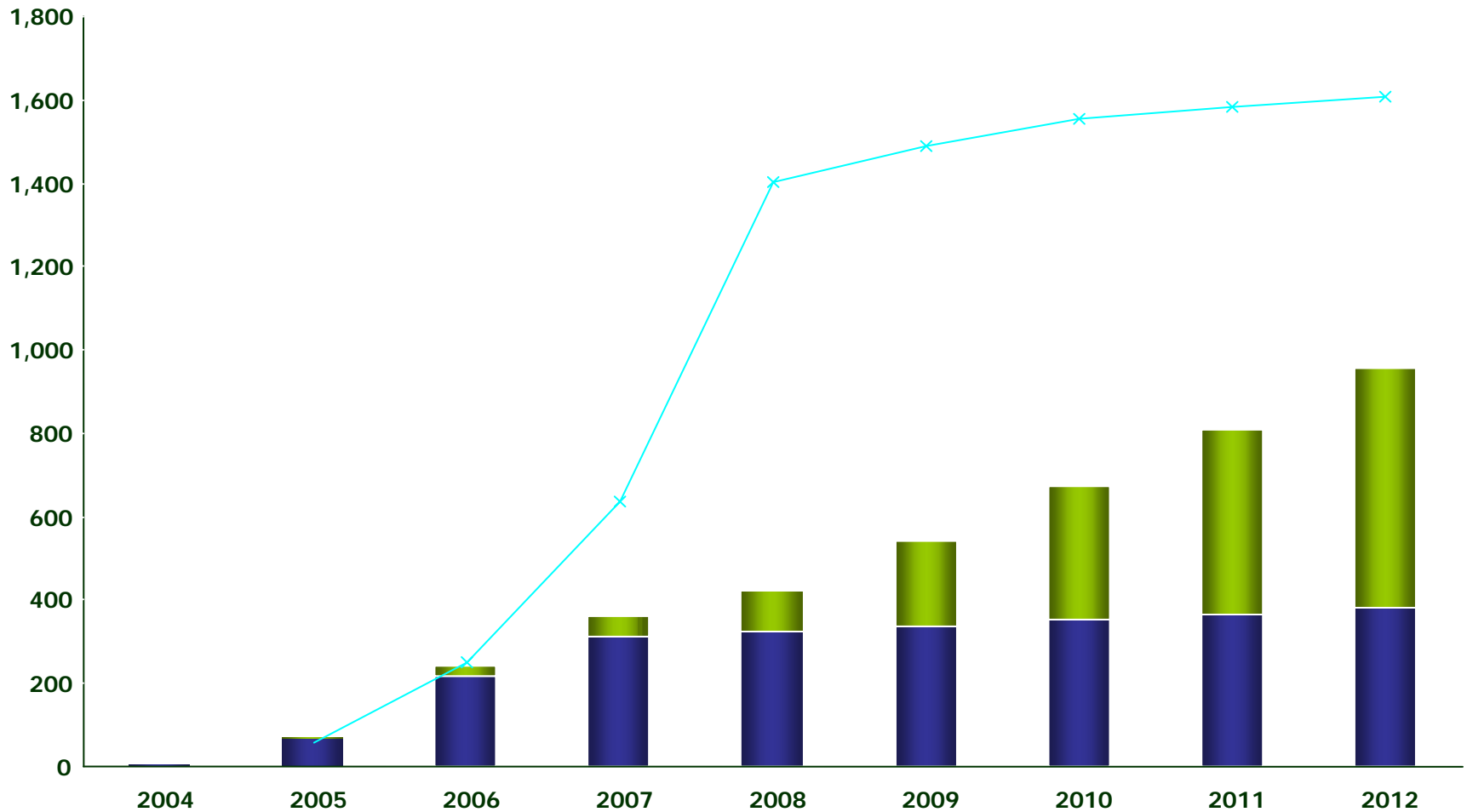
Quantity

Unit Price

Value

# Ethanol Demand vs Production

M. litres



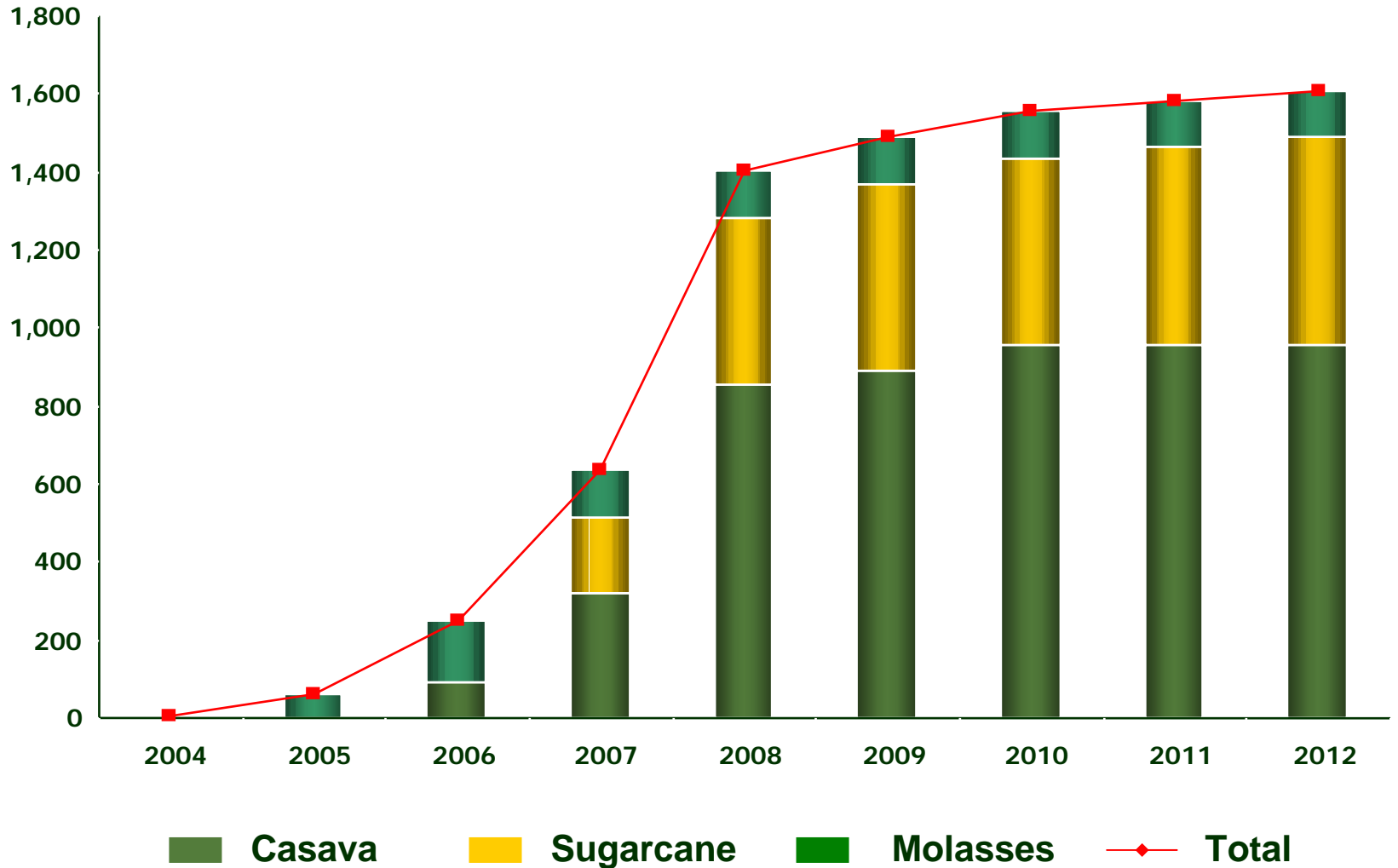
 Ethanol Demand  
for Octane 95

 Ethanol Demand  
for Octane 91

 Ethanol Production

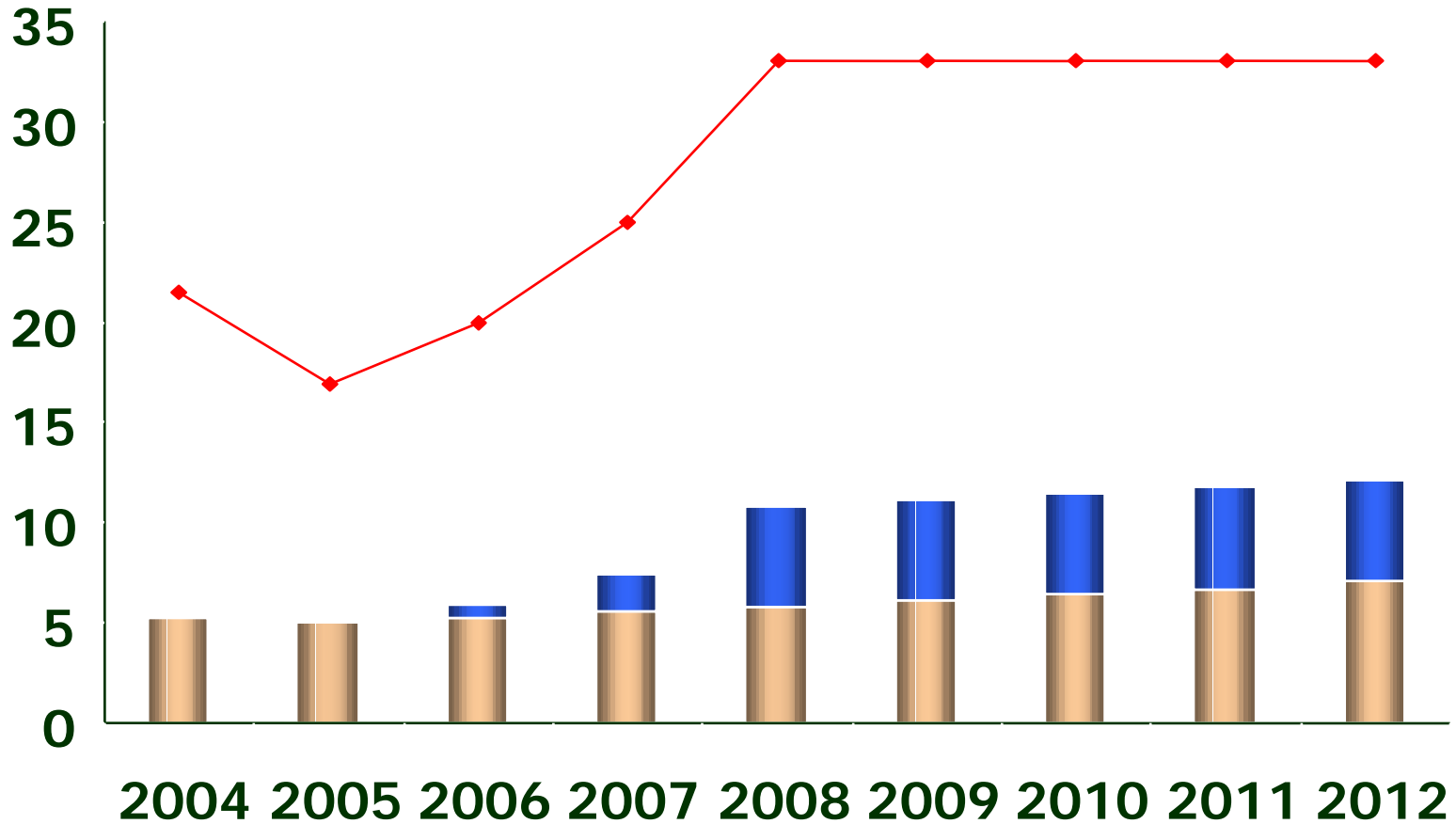
# Ethanol Production

M. litres



# Feedstocks Balance - Cassava

M. tons



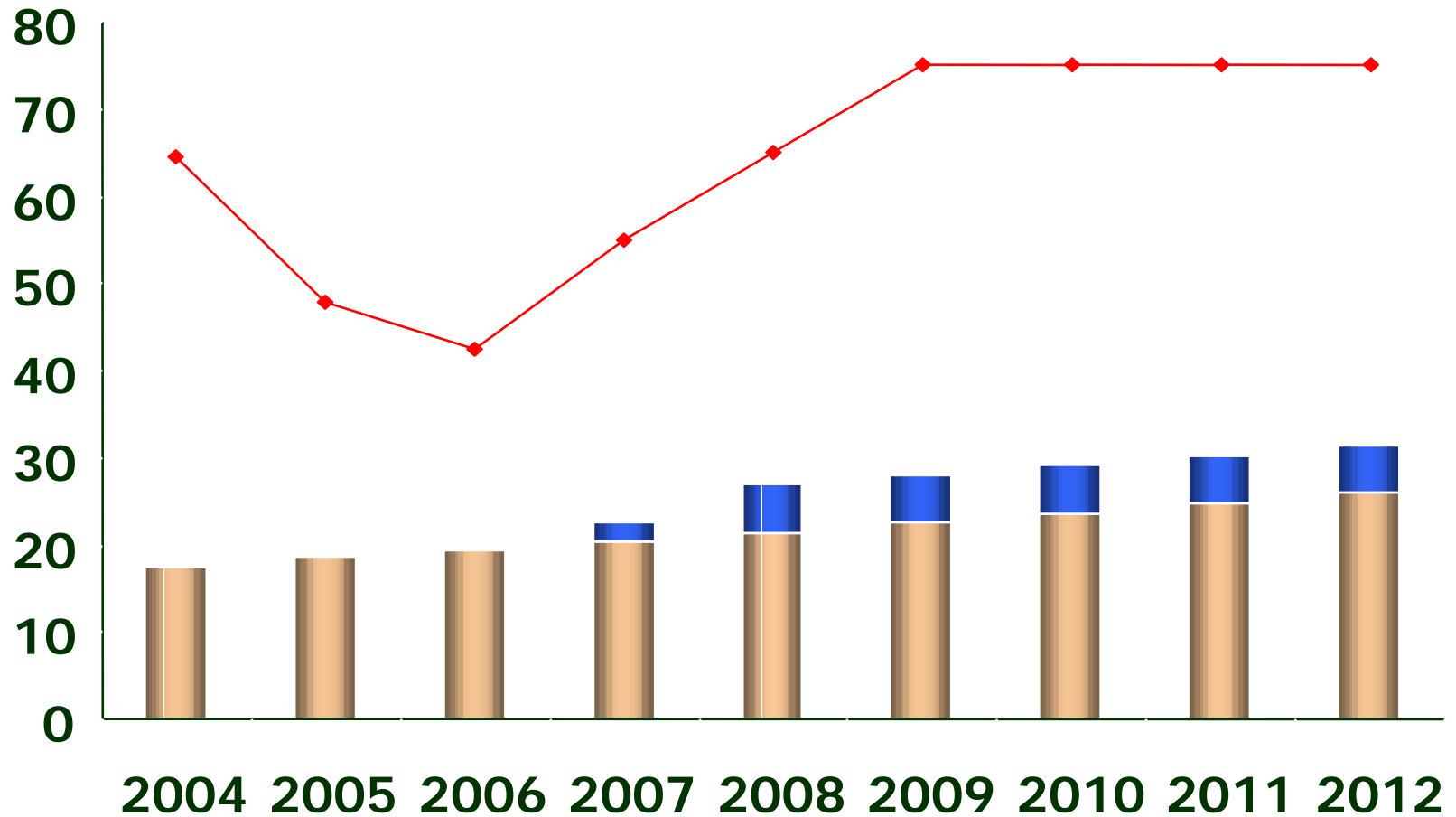
 Local Consumption

 For Ethanol Use

 Production

# Feedstocks Balance - Sugarcane

M. tons



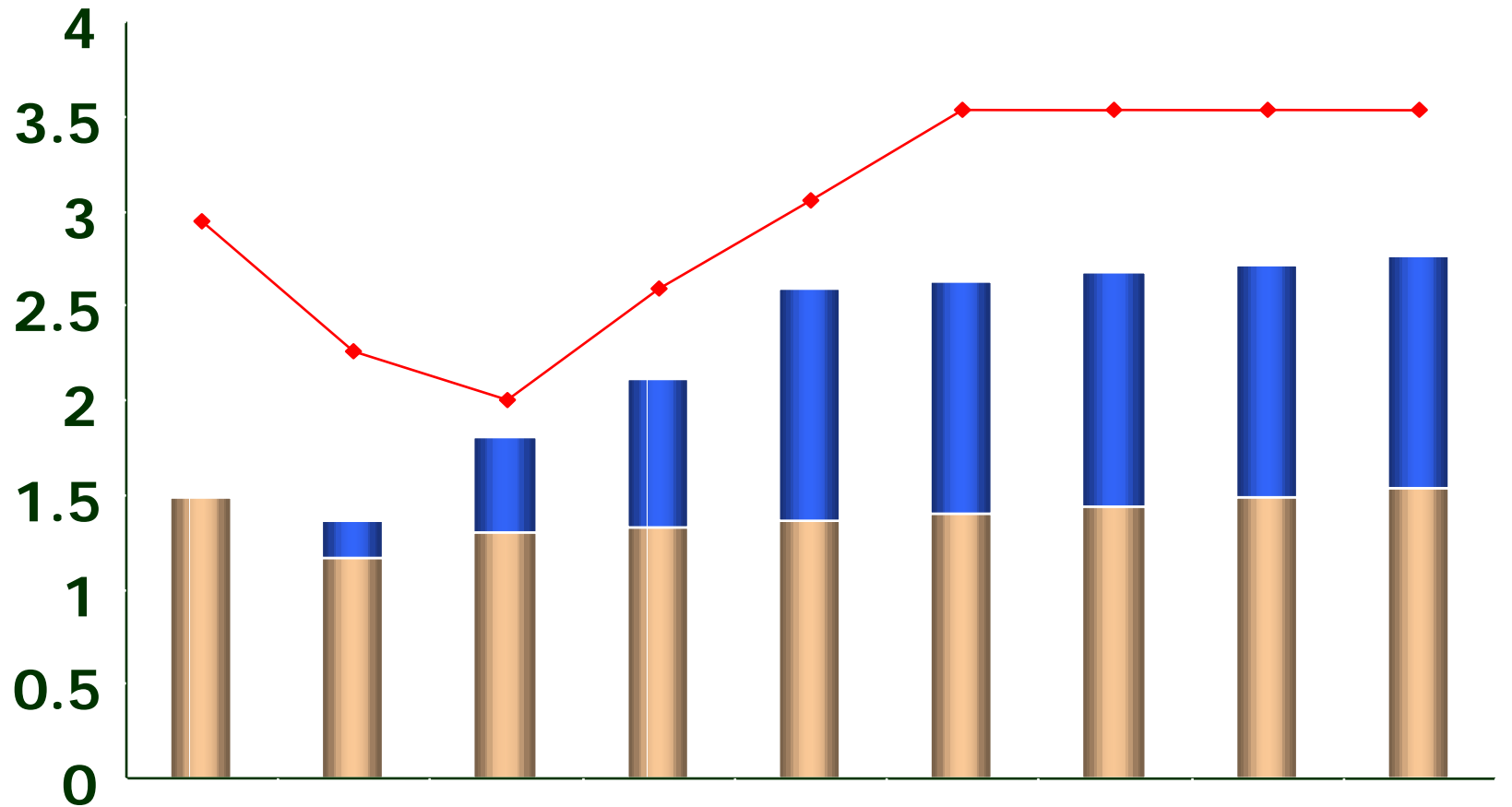
Local Consumption

For Ethanol Use

Production

# Feedstocks Balance - Molasses

M. tons



2004 2005 2006 2007 2008 2009 2010 2011 2012

Local Consumption

For Ethanol Use

Production

# Feedstocks Price

Baht/ton

2400

2100

1800

1500

1200

900

600

300

0

2001

2002

2003

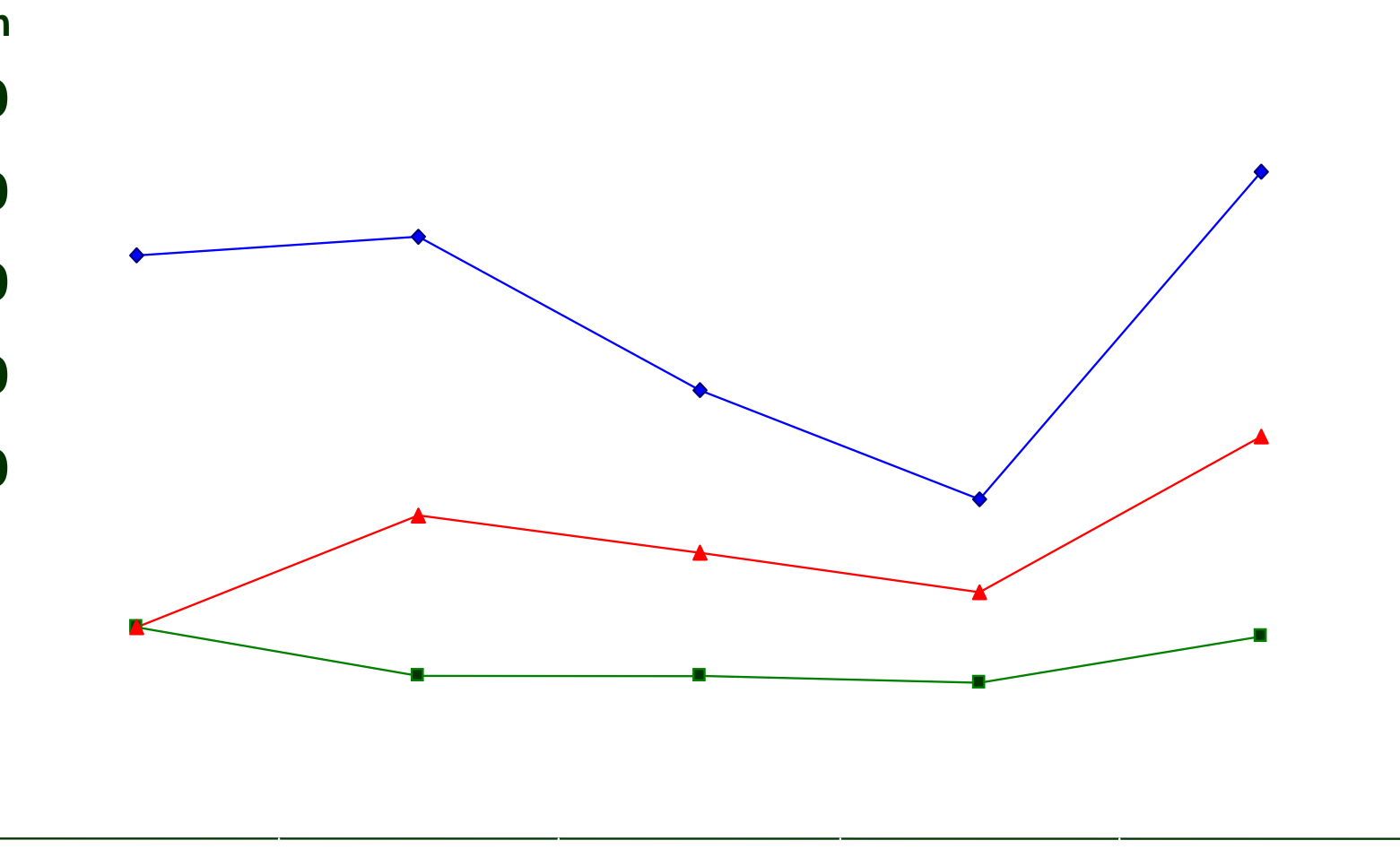
2004

2005

—▲— Cassava

—■— Sugarcane

—◆— Molasses



# Ethanol Price - Cassava

Price of Cassava		Premium (Baht/liter)	Ethanol Price (Baht/liter) @IRR 12%	
Cassava Root (25% starch) (Baht/Kg.)	Cassava Chip (Baht/ton)		Floor	Ceiling
1.20	3,000	0 - 0.44	15.72	16.16
1.50	3,700	0 - 0.44	17.75	18.19
1.80	4,400	0 - 0.44	19.78	20.22
2.06	5,000	0 - 0.44	21.52	21.96

# Ethanol Price - Molasses

<b>Molasses Price</b> (Baht/ton)	<b>Marketing Margin</b> (Baht/litre)	<b>Ethanol Price (Baht/liter)</b> <b>@IRR 12%</b>	
		<b>Floor</b>	<b>Ceiling</b>
2,000	0 - 0.44	14.37	14.81
2,600	0 - 0.44	16.83	17.27
3,000	0 - 0.44	18.47	18.91
3,800	0 - 0.44	21.75	22.19

# Price Structure of Gasohol

unit : baht/litre

	<b>ULG95</b>	<b>Gasohol 95</b>	$\Delta$
Ex-Refinery Price	16.8247	17.3829	-0.5582
Tax & Oil Fund + Cons. Fund	5.8935	3.7242	2.1693
Wholesale Price	22.7182	21.1070	1.6112
WS + VAT	24.3085	22.5845	1.7240
Marketing Margin + VAT	1.3315	1.5555	-0.2240
<b>Retail Price</b>	<b>25.64</b>	<b>25.44</b>	<b>1.50</b>

Note : Price shown as of 7 November 2005

# Approved Fuel Ethanol Projects

No	Company	Location	Raw Material	Capacity (litres/day)	Scheduled Completion
1	Pornvilai	Ayudhaya	Molasses	25,000	completed
2	Thai Alcohol	Nakornprathom	Molasses	100,000	completed
3	Thai Agro Energy	Suphanburi	Molasses	150,000	completed
4	Thai Ngyuan Ethanol	Koankean	Cassava	130,000	completed
5	International Gasohol	Rayong	Cassava	170,000	Dec. 2005
				500,000	June 2007
6	Khonkean Alcohol	Koankean	Cane, Molasses	100,000	Dec. 2005
				150,000	Dec. 2006

# Approved Fuel Ethanol Projects

No	Company	Location	Raw Material	Capacity (litres/day)	Scheduled Completion
7	Rerm Udom Ethanol	Nhongbuarumphu	Cane, Molasses	200,000	Nov. 2007
8	Siam Ethanol Industry	Kanchanaburi	Cane, Molasses	100,000	Feb. 2007
				200,000	June 2008
9	Mitr Phol Sugar	Suphanburi	Cane, Molasses	200,000	Dec. 2007
10	United Farmer & Industry	Chaiyaphum	Cane, Molasses	200,000	Dec. 2006
11	Thai Roong Ruang Energy	Saraburi	Cane, Molasses	120,000	March 2007
				200,000	Dec. 2010
12	Thai Roong Ruang Energy	Phetchaboon	Cane, Molasses	120,000	Nov. 2008
				200,000	Dec. 2011

# Approved Fuel Ethanol Projects

No	Company	Location	Raw Material	Capacity (litres/day)	Scheduled Completion
14	N.Y. Ethanol	Nakornrachasrima	Cassava	150,000	June 2007
15	Rajburi Ethanol	Rajburi	Cassava	100,000	June 2007
16	KI Ethanol	Nakornrachasrima	Cane, Molasses	100,000	July 2007
17	Angvian Industry	Nakornrachasrima	Cane, Molasses	160,000	Dec. 2007
18	Thai Sugar Ethanol	Kamphangphet	Cassava	200,000	Dec. 2009
19	Somdet (1991)	Udonthani	Cassava	200,000	Sep. 2007

# Approved Fuel Ethanol Projects

No	Company	Location	Raw Material	Capacity (litres/day)	Scheduled Completion
20	Fakwantip	Prachinburi	Cassava	60,000	Dec. 2006
				120,000	Dec. 2007
21	Siam Ethanol Chaiyaphum	Chaiyaphum	Cassava	100,000	June 2007
22	Picni Ethanol	Chacheongsao	Cassava	250,000	June 2007
				500,000	June 2008
23	Boon Anek	Nakornrachasrima	Cassava	600,000	Dec. 2007
24	Burirum Ethanol	Burirum	Cassava	100,000	June 2007
				200,000	Dec. 2007
			TOTAL	4,785,000	

*Thank you...*