



Successful Business Models for Implementation of New and Renewable Energy Technologies in APEC Economies

EGNRET 33 Project Workshop

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Successful Business Models for NRET Implementation





Coverage

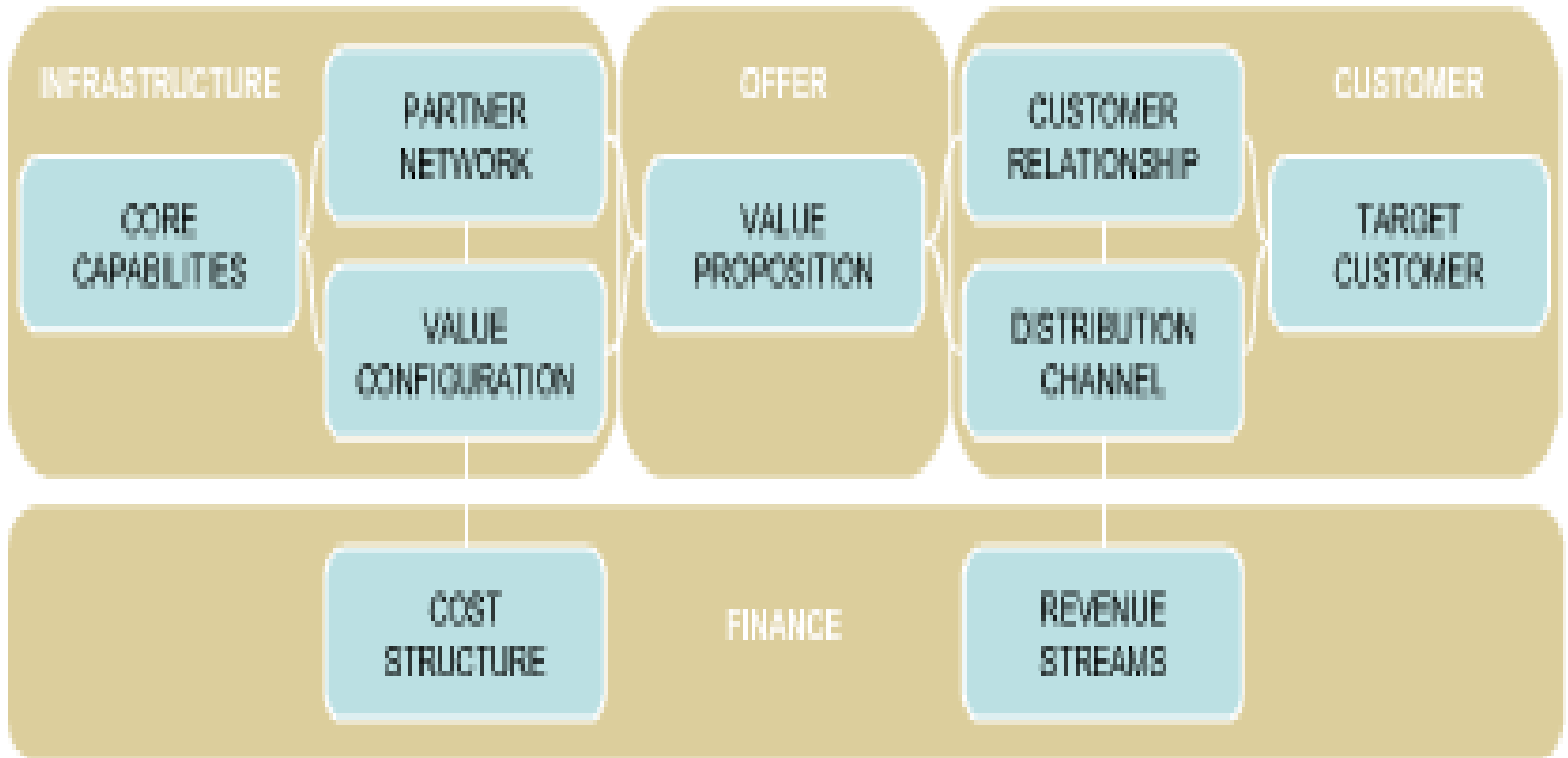
**Business Model definition,
NRET categories and characteristics,
The business environment - Incentives,
Models identified and Case Studies,
Successful Business Models,
Lessons learned**

The Study Outcomes



What is a Business Model?

Successful Business Models for NRET Implementation





NRET Types, Categories and Characteristics

Successful Business Models for NRET Implementation



NRET Form	Status
<p>Renewable Energy Options</p> <p>Hydroelectricity generation Electricity generation from Wind Power Electricity generation from Solar Energy Electricity generation from Geothermal Energy Electricity generation from Marine Energy Production of Biogas Production of Biodiesel from Micro-algae Production of Biodiesel from animal fats and vegetable oils Production of Ethanol from agricultural biomass Production of alcohols from forest biomass</p>	<p>Commercial Commercial Commercial Commercial Demonstration Commercial Development Commercial Commercial Development</p>
<p>New or Alternative Energy Sources</p> <p>Compressed Natural Gas (CNG) Liquefied Natural Gas (LNG) Liquefied Petroleum Gas (LPG) Methanol - from natural gas or coal Hydrogen - from natural gas, coal or biomass Co-generation of Heat and Electricity</p>	<p>Commercial Commercial Commercial Commercial Development Commercial</p>
<p>Non-conventional Hydrocarbon Fuels</p> <p>Gas to liquids Coal to liquids Biomass to liquids</p>	<p>Commercial Commercial Development</p>



Categories and Characteristics

Heat and Power

- Primary Energy usually free (Solar, Wind, Hydro),
- Direct sale of Heat and Power to end user or utility grid,
- Key focus: Conversion of primary energy to Heat and Power, financing.

Renewable Fuels (Biofuels)

- Biomass costly to grow & harvest, low energy density,
- Biofuels blended into transport fuels – existing infrastructure,
- Key focus: Feedstock supply, biofuel production and distribution, financing

Very different focus



Categories and Characteristics

Alternative Transport Fuels

- Primary Energy feedstock a major cost component,
- Distribution may involve substantial infrastructure cost,
- Key focus: feedstock supply, conversion to usable fuels, fuel distribution, financing.

Capital Cost is a key focus



The Business Environment and Incentives



The Business Environment - Incentives

A successful Business Model must take full advantage of the:

- **Commercial Environment,**
- **Regulatory Framework,**
- **Financial Incentives available.**

Financing NRET is the initial hurdle!

Successful Business Models for NRET Implementation



Fiscal/financial	Regulatory	Other
Feed-In Tariffs and Net metering	Renewable Portfolio Standards RPSs	Government facilities use NRET
Excise tax exemption or rebate	Mandated sales/purchase for fleet vehicles (enforced)	Information dissemination; public awareness campaigns
Road/registration-tax exemption or rebate	Harmonised refueling facility standards and codes	Voluntary agreements with OEMs to develop and market NRET equipment
Sales/Import tax exemption or income/profit tax credit (purchasers and OEMs)	Vehicle conversion standards and industry codes of practice	Direct R,D & D funding for NRET
Investment tax credits for distribution infrastructure and R&D	Health and safety regulations	
Grants/tax credits for equipt conversion/acquisition	Exemptions from energy end use restrictions	
Rapid depreciation for commercial plant and distribution infrastructure		
Parking/Road User charge exemptions		



NRET Incentives in APEC Economies

Country	Feed-in tariff	Renewable port-folio standard	Capital subsidies, grants, or rebates	Investment or other tax credits	Sales tax, energy tax, or VAT reduction	Tradable renewable energy certificates	Energy production payments or tax credits	Net metering	Public investment, loans, or financing	Public competitive bidding
Developed and transition countries										
Australia	*	*	*			*			*	
Canada	(*)	(*)	*	*	*			(*)	*	(*)
Germany	*		*	*	*				*	
Japan	(*)	*	*			*		*	*	
Korea	*		*	*	*				*	
New Zealand			*						*	
Russia			*			*				
Spain	*		*	*					*	
United States	(*)	(*)	*	*	(*)	(*)	*	(*)	(*)	(*)
Chile		*	*							
China	*	*	*	*	*				*	*
Indonesia	*									
Mexico				*	*			*		
Phillipines	*		*	*	*				*	
Thailand	*		*					*	*	



ATF Policies and Measures in APEC Economies

Economy	Fuel taxes	Vehicle taxes	Vehicle conversion	Refuelling stations	Mandates	Other measures
Australia	Yes		Yes		Yes	Yes
Canada	Yes	(Yes)	Yes	Yes	Yes	Yes
China	Yes				Yes	
Hong Kong	(Yes)		Yes	Yes	Yes	
Japan	Yes		Yes	Yes		Yes
Korea	Yes	Yes	(Yes)	Yes		Yes
Mexico	Yes	(Yes)				Yes
New Zealand				Yes		
Russia	Yes					
Thailand	Yes	Yes			Yes	Yes
United States	Yes	Yes	Yes	Yes	Yes	Yes

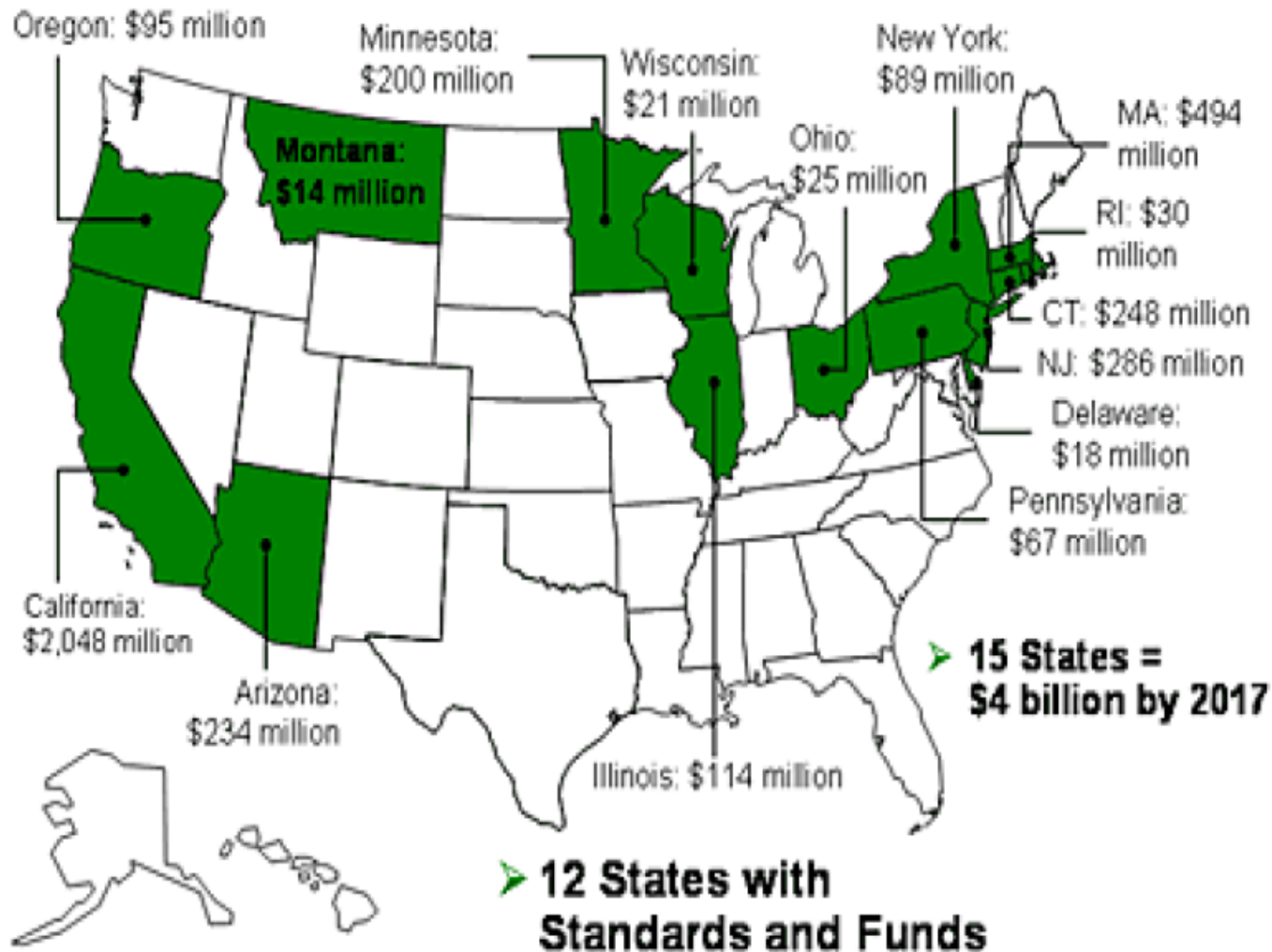


Biofuels Mandates in APEC Economies

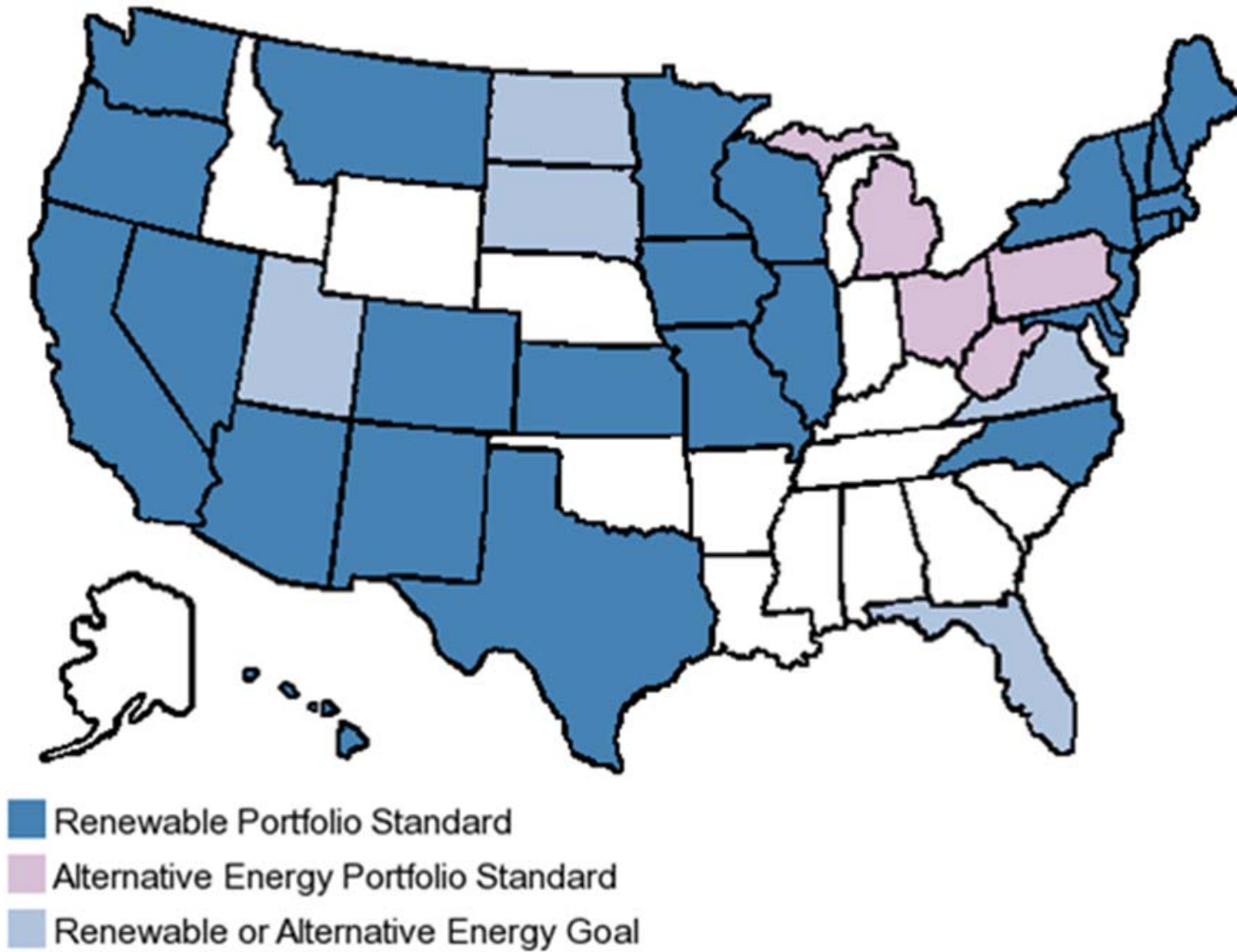
Country	Mandate
Australia	E2 in NSW to E10 by 2011; E5 in Queensland by 2010 350 million litres of Biofuels by 2010
Canada	E5 by 2010 and B2 by 2012; E5 in use in Ontario and E7.5 in Saskatchewan and Manitoba;
Chile	Voluntary E5 and B5
China	E10 in 9 provinces 10 mill tonnes Ethanol by 2010, 30 mill tonnes by 2020 0.3 mill tonnes Biodiesel by 2010, 2 mill tonnes by 2020
Malaysia	Mandate for B5 by 2008 suspended
New Zealand	3.4% total biofuels by 2012 (mandate repealed, 2009)
Peru	B5 and E7.8 by 2010 nationally regionally 2006 (ethanol) and 2008 (biodiesel)
Phillipines	B1 and E5 by 2008; B2 and E10 by 2011
Thailand	E10 by 2007; 3% biodiesel share by 2011
United States	130 billion liters/year by 2022 (36 billion gallons) E10 in Iowa, Hawaii, Missouri, Montana; E20 in Minnesota B5 in New Mexico E2 and B2 in Louisiana and Washington State Pennsylvania 3.4 billion liters/year biofuels by 2017



Renewable Energy Funds



Successful Business Models for NRET Implementation





Some ingredients for Success

- Capture **maximum value** for the business,
- Has strong **core capabilities**,
- Controls key elements of the **value chain**,
- Provides **value** for all participants,
- Ideally, has multiple **revenue streams**,
- Has strong **partner networks**,
- **Hedges** against product and other revenue price changes,
- Responds to **consumer requirements**,
- **Sustainability** over time.

But! Any model can fail if its basic drivers fail



Heat and Power

- **Community Wind Models:**
 - Multiple Local Owner model,
 - **The Flip model,**
 - Consumer Cooperative model,
 - Municipal Ownership model.
- **Multi-party Ownership models for Anaerobic Digesters:**
 - Dual Ownership model,
 - Community Digester model.
- **Third Party Ownership model:**
 - **Utility Ownership model,**
 - Private Sector Ownership model,
 - Co-operative Ownership model,
- **Project Aggregation model.**

And there are more.....



Heat and Power (continued)

- **Renewables-as-Appliance models:**
 - **Retailer Sales model,**
 - **Standardised Configuration model.**
- **New Construction model.**
- **Environmental Credit Market models:**
 - **Renewable Energy Credit Market model,**
 - **Carbon Offset Market models,**
 - **Emissions Allowance Market models.**

Each of these can be successful in the right environment



Renewable Fuels

- **Corporate Business models.**
- **Farmer-Owned Business models.**
- **Engineer/Builder-Owned models.**
- **Franchise Business models.**

There are many variants of these



Alternative Transport Fuels

- **State Management models,**
- **State Ownership models,**
- **Third Party Ownership models,**
- **Private-Public partnership models,**
- **Free Market models.**

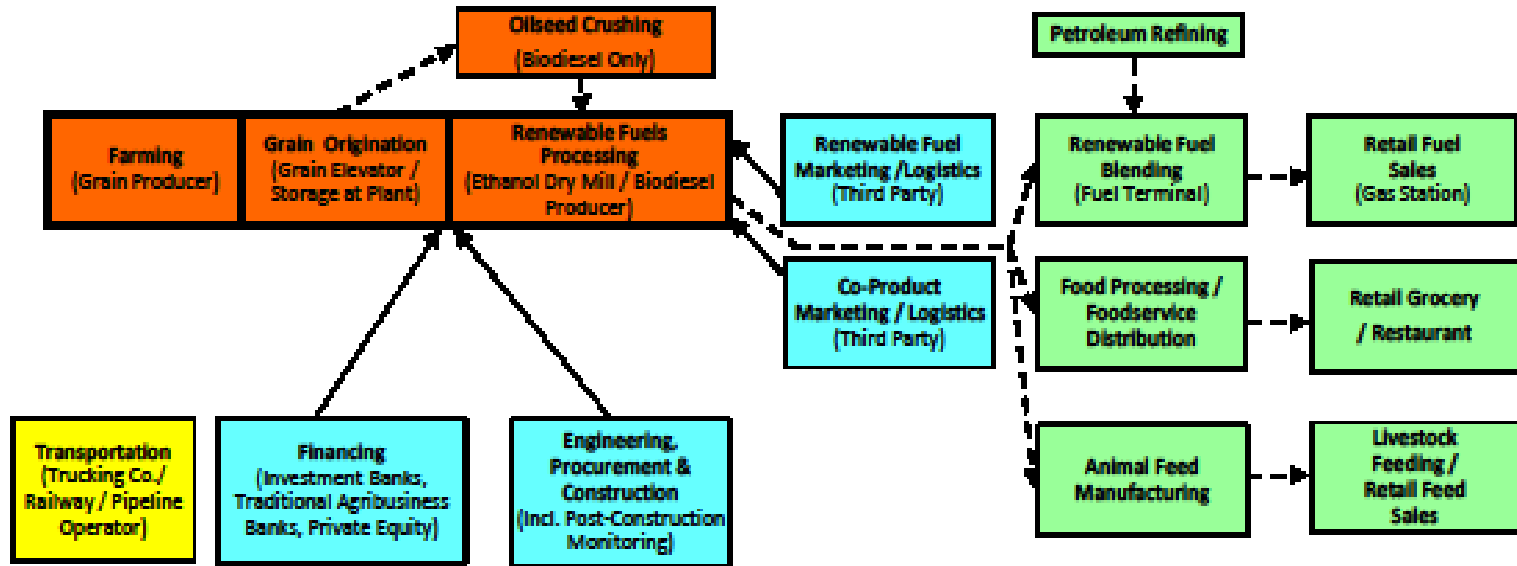






Renewable Fuels - Biofuels

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Farmer Owned model

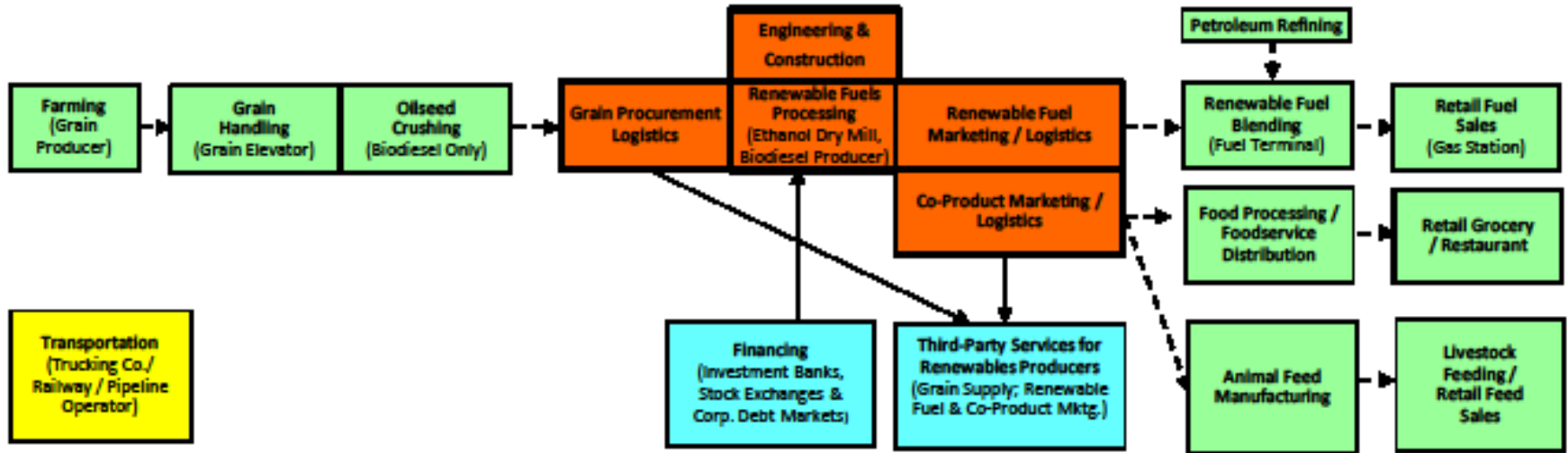






-  Renewable Fuel Producer
-  Transportation/Physical Commodity Flow
-  Third Party
-  Services Provided

Successful Business Models for NRET Implementation



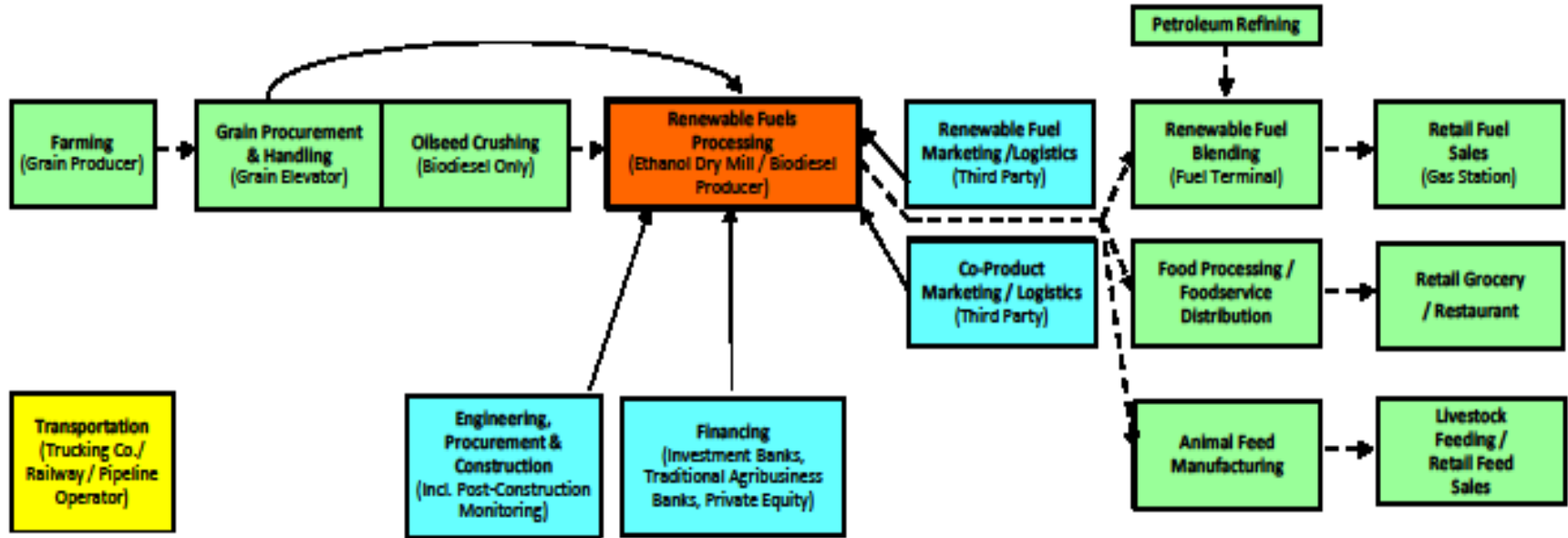
Engineer/Builder Owned model



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Franchise Ownership model



Renewable Fuel Producer

Transportation/Physical Commodity Flow

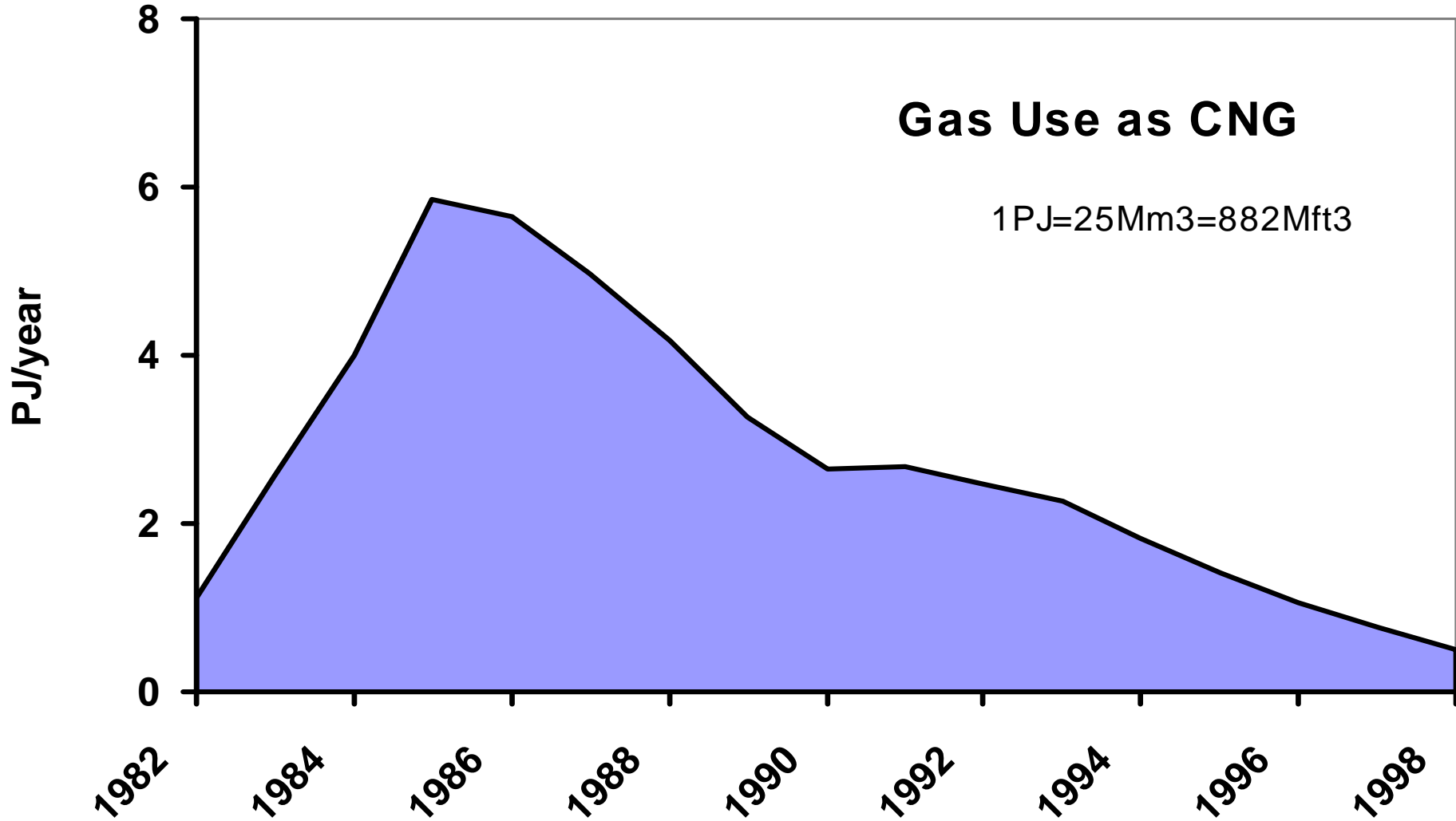
Third Party

Services Provided



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Successful Business Models for NRET Implementation



Successful Business Models for NRET Implementation





Lessons Learned

No Universal model; models employed depend on:

- Energy type,
- Project Size,
- The Economy involved.

Govts create the Environment : Business Models Accommodate,

Models for **Implementation** different from **ongoing business**,

All models will fail if unable to adapt to change in:

- commercial conditions,
- pricing or cost structure,
- customer acceptance,

Success depends on people involved; partnerships established.

Consumer demand overcomes all!



Thank You