

# WELCOME



**RUPANTARITA PRAKRITIK GAS COMPANY LIMITED**  
**(RPGCL)**  
*(A Company of Petrobangla)*

**Meeting  
on**

**Experience sharing Dialogue on  
Improving Quality and Performance of  
Natural Gas Vehicles Program in South  
Asia  
20 January, 2011  
Dhaka**

**How do we ensure good  
conversion of old  
vehicles and  
the prospects of getting  
dedicated vehicles.**

# CNG Background

- CNG was first familiarized through a project under Petrobangla in early eighties.
- Petrobangla formed “Compressed Natural Gas Company Limited” in 1987.
- Company’s name was changed to “Rupantarita Prakritik Gas Company Limited” (RPGCL) in 1991.

# Activities of RPGCL

- CNG expansion program
  - Issuing permission to private entrepreneurs
  - Providing hands on training on CNG
  - Launching awareness programs regarding safe use of CNG.
- Producing LPG, MS & Diesel from bi-products (NGL/Condensate) of gas fields in the Sylhet Region.
- Operating CNG Station & Workshop in Dhaka
- Handling condensate at Ashugang.

# CNG Activities at a glance

(up to Dec' 10)

- Station under operation : 587 nos.
- Conversion workshop u/o : 177 nos.
- Districts under CNG network : 23 nos.
- Gas for CNG : 109 mmcf/d
- Monthly Oil replacement value : 858 crore
- Employment Generation : 18000 persons
- Contribution to GDP : ---- crore

# **Challenges to implement NGV programs**

- Pessimistic views**
- Scarcity of CNG Refueling Stations**
- Extra Investment for Conversion**
- International Oil price**
- Insufficient Gas Pipeline Network**
- Lack of Awareness**

# Government Initiatives & Policy :

## Government Initiatives:

- CNG Pilot Project (1983-1986)
- CNG Extension Project (1986-1996) :
- CNG Extension project (2000-2005).
- TA Project for Capacity building (2000-2005).
- TA Project for Codes and Standards (2002-2003).
- Dhaka Clean Fuel Project (2004-2008)

# Government Initiatives & Policy :

## Government Policies :

- Private Sectors Participation
- Separate Tariff
- Duty Free Import of Equipment
- Priority in installation of Refueling Stations
- Development of Gas Pipeline Network
- Allocation of Government Land



# **Government Initiatives & Policy :**

- Phasing out of two strokes three wheelers vehicles**
- Introducing NGVs**
- One Stop Approval Services**
- Economic benefit of CNG**

# CNG Conversion Workshops in Bangladesh

(December 2010)

1. Bogra	:	12 nos.
2. Dhaka	:	79 nos.
3. Savar	:	8 nos.
4. Gazipur	:	10 nos.
5. Narayanganj	:	6 nos.
6. Comilla	:	6 nos.
7. Feni	:	3 nos.
8. Chittagong	:	23 nos.
9. Sylhet	:	14 nos.

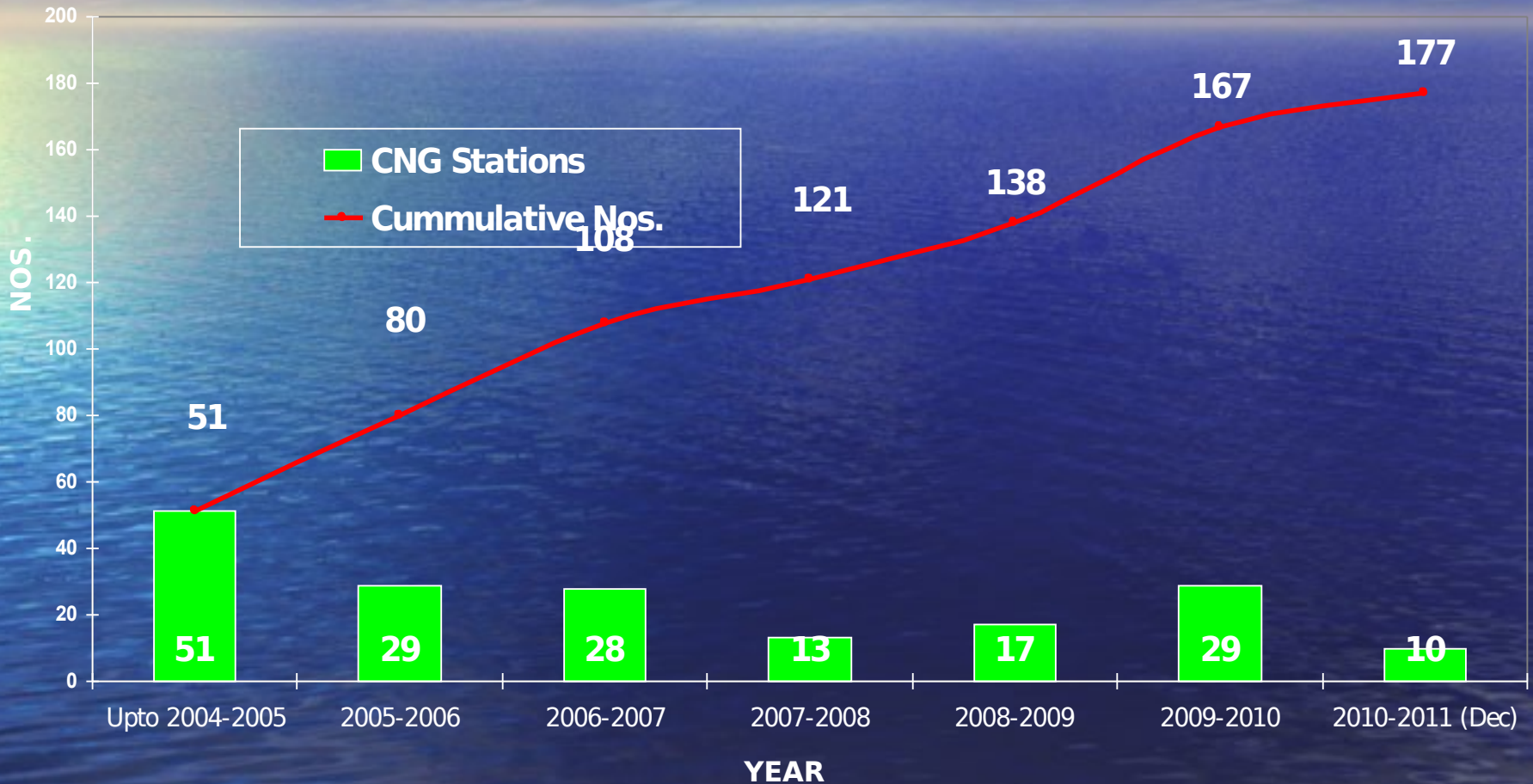
# CNG Conversion Workshops in Bangladesh

(December 2010)

10. Manikganj	:	3 nos.
11. Pabna	:	4 nos.
12. Moulovibazar	:	4 nos.
13. Mymensing	:	2 no.
14. Sirajgong	:	1 no.
15. Noakhali	:	1 nos.
<u>16. Habiganj</u>	:	<u>1 nos.</u>
<b>Total</b>	:	<b>177 nos.</b>

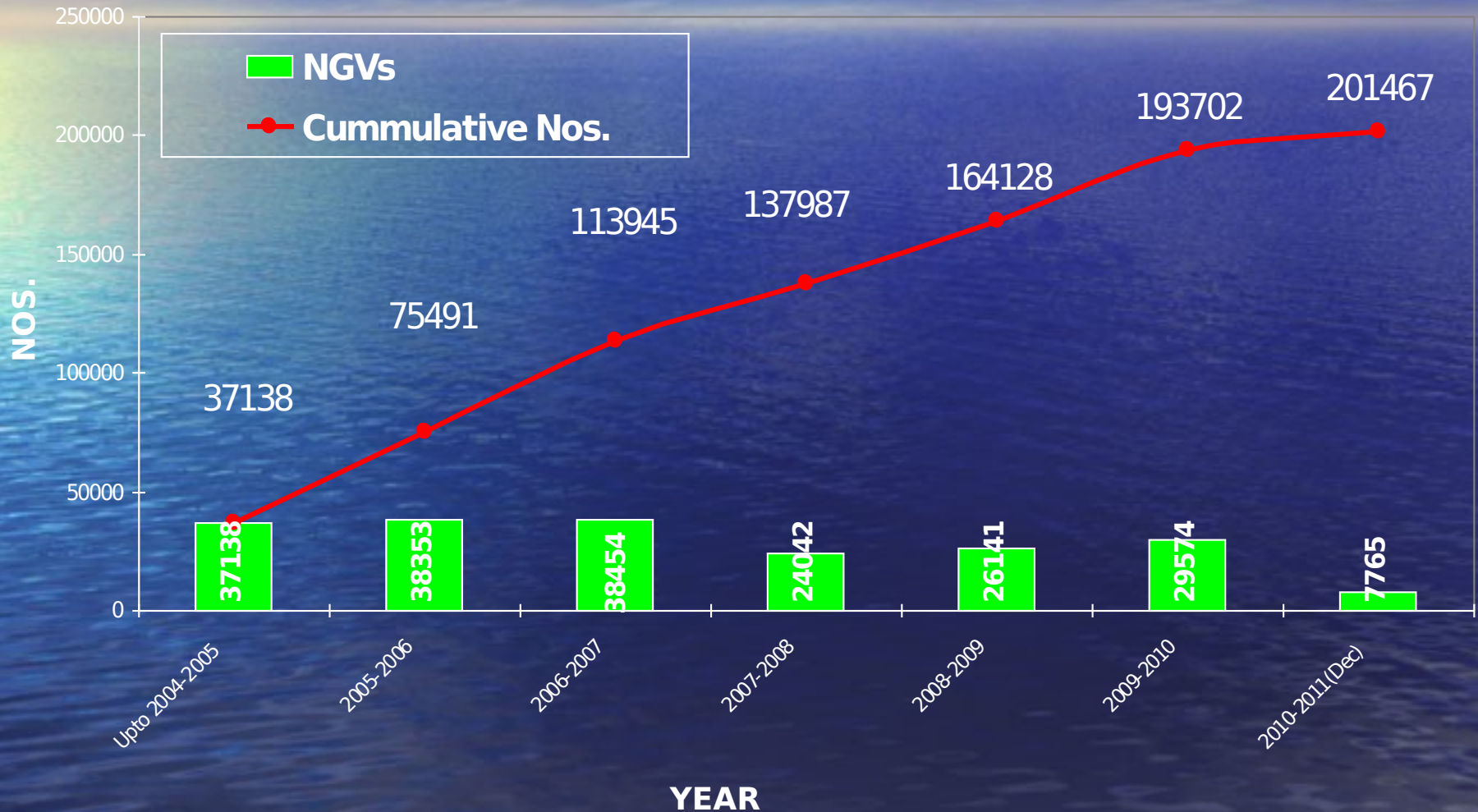
# Chronological Development:

## Growth of CNG Stations



# Chronological Development

## Growth of Natural Gas Vehicles



# NGV Status of Bangladesh

(December 2010)

- NGV in Bangladesh : 2,01,467 nos.
- World Ranking : 10
  - Locally converted : 158570 nos.
  - Imported : 42897 nos.
    - Bus : 5124 nos.
    - Taxi : 12,000 nos.
    - 3-Wheeler : 25,773 nos.

# Contribution of CNG in air quality improvement

- Before using CNG, the uncontrolled emission from two-stroke three-wheeler baby taxi and diesel bus were major cause of air pollution in Dhaka City.
- It had poor visibility due to air pollution in many areas of Dhaka City.
- Eye irritation, respiratory illness cardio vascular diseases were common phenomenon to City dwellers.
- Natural gas of Bangladesh practically contains no sulfur.
- By raising the use of CNG substantial improvement in air quality is observed in urban areas.
- Govt. has also banned the two-stroke baby taxi from Dhaka City in 2003.
- Now approximately 13000 four-stroke CNG baby taxis are running in Dhaka City.

# Economic Benefits of Using CNG

- Approximately 3.0 MMCMD gas is required for CNG which is approximately 6% of daily production.
- The following highlights are updated up December 2010 :
- Monthly average CNG usage (approx.) 92.88 MMCM, which is equivalent to 112 million liters Octane.
- The market price of this octane is approximately Tk.858.00 crore
- Yearly savings in foreign exchange for using CNG is approximately  $\cong$  US\$ 1471.00 Million (Tk. 10298.00 crore)

**Note :**

1 CM  $\cong$  1.24 Liter Octane; Octane Price : Tk. 77.00 per Liter & 1 US\$  $\cong$  Tk. 70.00



# Standard Codes of Practices

- Presently all workshops are installed and converted as per New Zealand /European Union / USA / Canadian Standards. RPGCL under its Dhaka Clean Fuel Project (DCFP) has prepared standards.
- RPGCL has prepared Bangladesh CNG Codes and Standards, which are under approval process.

# Types of CNG Conversion

- All old vehicles are Converted in following ways :
  - Bi fuel Conversion
  - Dual Fuel Conversion
  - Dedicated Conversion
  - Others

# Types of CNG Conversion

## Bi fuel Conversion

- Bi fuel Conversion is done mainly for Spark Ignition (SI) engines, i.e. petrol/Octane engines.
- SI engines starting from carburetor engine, Electronic Fuel Ignition (EFI) engines and variable-valve-timing-intelligent (VVTi) engines can be converted in CNG.
- Due to technological development conversion techniques are changing from generation to generation.

# Types of CNG Conversion

## Dual Fuel Conversion

- Dual fuel Conversion is done mainly for Compression Ignition (CI) engines, i.e. diesel engines.
- For this conversion no engine modification is required.
- This conversion is suitable for the engines, which run in a constant rpm.
- Various electronics controller devices are built for this conversion.
- Still research is going on for the development of Dual fuel conversion.

# Types of CNG Conversion

## Dedicated Conversion

- Dedicated Conversion is also done mainly for CI engines.
- In this systems engine modification or rebuild of engines are required.
- In the other word CI engines are converted to SI engines first before converting them to CNG.
- The engine head is rebuilt or modified in such a way that the compression ratio is properly maintained.
- For this conversion proper gasket and lube oil should used for maintaining engine temperature.
- The cooling systems may be needed to changed or redesigned for this conversion.

# Types of CNG Conversion

## Others Conversion

- In some cases, diesel engine of vehicle is replaced by other SI engines of same ratings. Then the new installed engine is converted to CNG systems.

# Ensure good conversion of old vehicles

Conditions of getting Conversion Workshop :

- The site of workshop to be fixed, well equipped and permitted.
- Machinery & Equipment should be as per prescribed standard.
- Machinery & Equipment should be imported as per prescribed Rules and Regulations of GOB.
- CNG Conversion Workshop must be set up and operated in accordance with prescribed standard.
- License under the Gas Cylinder Rules, 1991 has to be obtained from the Department of Explosives.

# Ensure good conversion of old vehicles

Conditions of getting Conversion Workshop  
(Contd) :

- Cylinder should be installed in accordance with standard specifications recognized under Rule 4 of the Gas Cylinder Rules, 1991.
- NGV Cylinders should be tested periodically.
- You have to follow Law, Rules and Policies/ Guidelines formulated by the Government of Bangladesh time to time in this respect.
- Have to ensure the proper quality of tailpipe emission as per emission standard of Bangladesh.
- CNG Conversion Workshop to be operated by the persons who are trained from RPGCL



# Ensure good conversion of old vehicles

- After fulfilling the conditions by the workshops RPGCL issues formal clearance and listed for BRTA listing.
- Vehicles converted from these listed workshops are supposed to avail annual fitness certificate accorded by BRTA.
- All Conversion Workshops must take license from BERC.
- Conversion Workshops are updated with newer conversion technologies by RPGCL, Importers of kits & Cylinder, Manufacturers regularly through training programs, workshops & seminars.

# Prospects of getting dedicated vehicles.

- Approximately fifty percent areas of country are covered with pipeline gas network as well as CNG activities.
- Government has also plan to expand more areas under gas pipeline network.
- More areas can be covered with daughter or mobile CNG stations.
- So, dedicated CNG vehicles could run major areas of country.
- We have dense populated urban areas.
- Small air pollution can affect a large number of people.
- We should emphasis on CNG as alternative & clean fuel.

# Prospects of getting dedicated vehicles.

- All over the world Gas is comparatively cheap fuel for vehicles.
  - 1 cubic meter CNG is approximately 1.3 liter of octane.
  - For a particular vehicle CNG of Tk. 16.75 is required for particular mileage.
  - On the other hand octane of Tk.  $(1.3 \times 77.00 =)$  100.00 is required to get the same mileage for that vehicle.
  - The economic benefit for using CNG for a vehicle is approximately 500%.
  - So, we have good prospect of getting dedicated vehicles.



THANKS