



# Use of “Next” Generation Programs to Inventory Methane and Carbon Dioxide Emissions

*Prepared by*

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# Why Look at Methane and CO<sub>2</sub> Emissions?

- STAR Program Saves 176 BCF of Gas
- Gas Prices Stabilizing at \$4- \$6/ MCF
- CO<sub>2</sub> Optimization Saves Fuel; Increases Efficiencies
- International GHG Pressures
- Improve Public Relations



# A Brief History...

- 1992 - UN Adopts Climate Change Framework. 1997 becomes Kyoto Protocol
- 1992 – EPA Forms Gas STAR to Reduce Methane Emissions
- 1996 – PanCanadian Conducts Company Wide GHG Inventory
- 1998 – Texaco Inventories GHG; to be used as a planning tool



## ... and Finally

- 2000 – BP Amoco Inventories GHG; Announces reductions and internal exchange program
- 2001 – API Publishes GHG Inventory Standards
- 2003 – “Next” Generation Inventory Programs Available



# Setting up a Methane and CO<sub>2</sub> Program

1. Goals and Objectives
2. Scope
3. Management and Operating Group Support
4. Costs and Rewards
5. Technical Approach
  - A. Accuracy and Reliability of Data
  - B. Consistency of Data
  - C. Methodology of Calculations
6. Selection of Inventory Programs



# Early Emission Inventory Programs

- “In-house” spreadsheets
- User developed
- Standardized calculations not used
- Limited in ability to handle vast quantities of data
- Results not always comparable
- Attempts to modify “criteria” programs



# **WANTED!!**

## **Standardized Calculations**

- Industry desires standardized techniques
- API develops “Compendium of Greenhouse Gas Emissions and Estimation Methodologies for the Oil and Gas Industry”



# Second Generation Programs

- Spreadsheet or database platform
- Use standardized calculations
- Spreadsheet programs still limited by platform
- Database programs web-enabled





# “Wish List” for “Next” Generation Programs

- Standardized Calculations
- Handle thousands of data points
- Monthly, quarterly or yearly input
- “Web” Feel
- Easy to use by field and engineering staffs
- Easy to understand reports
- Adapted to inter or intra-net



# GHG Plus +: Meeting the “Next” Generation Requirements




- Uses API Calculations
- Database platform; Unlimited data input
- Time interval determined by user
- “Web” look and feel
- Built in help and program documentation
- Easy to use input screens
- Customizable reports
- Can be placed on intra or inter-nets




# GHG PLUS+ Entry Screen

**Contek LLC** *GHG PLUS+*  
ENGINEERING • ENVIRONMENT • SAFETY • MANAGEMENT SYSTEMS  
*Easiest and Most Accurate Way to Calculate Greenhouse Gas Emission*

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<p><b>Step 1: Enter Facility Identification Information</b></p> 	<p><b>Step 2: Enter Facility Equipment and Energy Use Information</b></p> 	<p><b>Step 3: View and Print Reports</b></p> 
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 **Program Help and Documentation**

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Easy to Understand Icons


Built in Help and Documentation



# Facility Input Screen

### Facility Information Input Form

Property Code/ Name:  

Year:    
YYYY Program Help and Documentation Home

**Heaters** | Engines | Flare | Mobile | Misc | Dehy | Amine | Tanks | Loading | Pneu Devices | Fugitive | Maintenance | Electricity

Input fuel used in heater treaters, heaters, line heaters or other type of fired device providing process heat. You may enter either the fuel quantity or the absorbed duty rating and the fired percentage to determine emissions.

Describe Combustion Sources:

Enter Type of Fuel:  Select Gas Analysis if Known:

**Method 1: Fuel Quantity and Composition Known**

Fuel Quantity:  Units: Natural Gas MCFD;  
Diesel, Butane and Propane in Gallons [Click here to enter a new gas analysis](#)

**Method 2: For Gas fired Equipment Only Where No Meter is Present: Leave "Fuel Quantity" =0, and Enter the Following:**

	Duty, Absorbed Heat Rating		Percent Fired During Time Period
Heater 1	<input type="text" value="0"/> BTU/HR		<input type="text" value="0"/> %
Heater 2	<input type="text" value="0"/> BTU/HR		<input type="text" value="0"/> %
Heater 3	<input type="text" value="0"/> BTU/HR		<input type="text" value="0"/> %
Heater 4	<input type="text" value="0"/> BTU/HR		<input type="text" value="0"/> %
Heater 5	<input type="text" value="0"/> BTU/HR		<input type="text" value="0"/> %

Easy to use tabs

User Selected Methods

Built in Explanations



# Easy to Customize Reports and Graphs

### Reports

- Electricity
- Engines
- Misc
- Fugitives
- Dehydration Units
- Flares
- Heaters
- Loading
- Maintenance
- Mobile
- Pneumatic
- Tank Venting
- Amine Units

Run Query

Return

### Summaries and Graphs

- By Property
- By Year
- All Data
- Summation of all Data
- GHG Summation
- Graph of Total



# Built in Help and Documentation

Help and Program Documentation		Information from the API
Heaters	Tank Venting	API Synopsis in Adobe Acrobat
Engines	Loading	
Flares	Pneumatic	
Mobile	Fugitives	
Misc	Maintenance	
Dehydration Units	Electricity	
Amine Units	General	
Return Home		



# Intranet Data Input

GHG EmissionS / Operation Property Editor - Microsoft Internet Explorer provided by BP Group Digital Business

File Edit View Favorites Tools Help

← Back → Forward × Stop Home Search Favorites History Print View Source

Address http://

## Greenhouse Gas Reports

INPUT DATA - BP OPERATIONS - PROPERTY - PRODUCING LEASE INFORMATION



New Property

GHG HOME

All Property Codes 2002 1st Quarter All Persons Search < < 1 of 213 > >

### INFORMATION ABOUT THE PROPERTY

PROPERTY NAME  PROPERTY CODE   
 QUARTER  YEAR  COMPLETED BY

### PRODUCTION AND WELL INFORMATION

BOPD  GAS WELLS   
 OIL GRAVITY  INJ/DISP WELLS   
 BWPD  OTHER WELLS   
 MCFD  GAS GRAVITY   
 OIL WELLS  GAS TYPE

### COMPRESSOR DATA

NUMBER OF COMPRESSORS   
 COMPRESSORS THROWS

### DIESEL FUEL USED

DIESEL ENGINE FUEL USE (Gallons)

### TREATERS

TREATERS TOTAL NO   
 TREATERS BURNER RATING BTU/HR   
 TREATERS % RUN TIME

### FWKOS

FWKO TOTAL NO   
 FWKO BURNER RATING BTU/HR   
 FWKO % RUN TIME

### TREATERS, BOILERS AND OTHER FIRED VESSELS

HEATERS TOTAL NO   
 HEATERS TOTAL BTU/HR

### OTHER LEASE EQUIPMENT

SEPARATORS, ETC TOTAL NO   
 OIL TANKS, NUMBER

Local intranet

Start Inbo... Ove... Ove... Ove... Ove... GHG... Pres... gree... GHG... 1:48 PM



## **Using GHG PLUS+ to Advance Your Reporting to the Next Level**

- **GHG PLUS+ is the “Next” generation program developed for the oil and gas industry**
- **Can be easily customized for your operations and reporting criteria**
- **User friendly**
- **“Web” look and feel to user**
- **Flexible for your ever changing property portfolio**
- **Reports can be changed or modified as needed**
- **No proprietary platforms; uses well known Microsoft Access platform**
- **Can be web-enabled**