

### 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 CO2 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

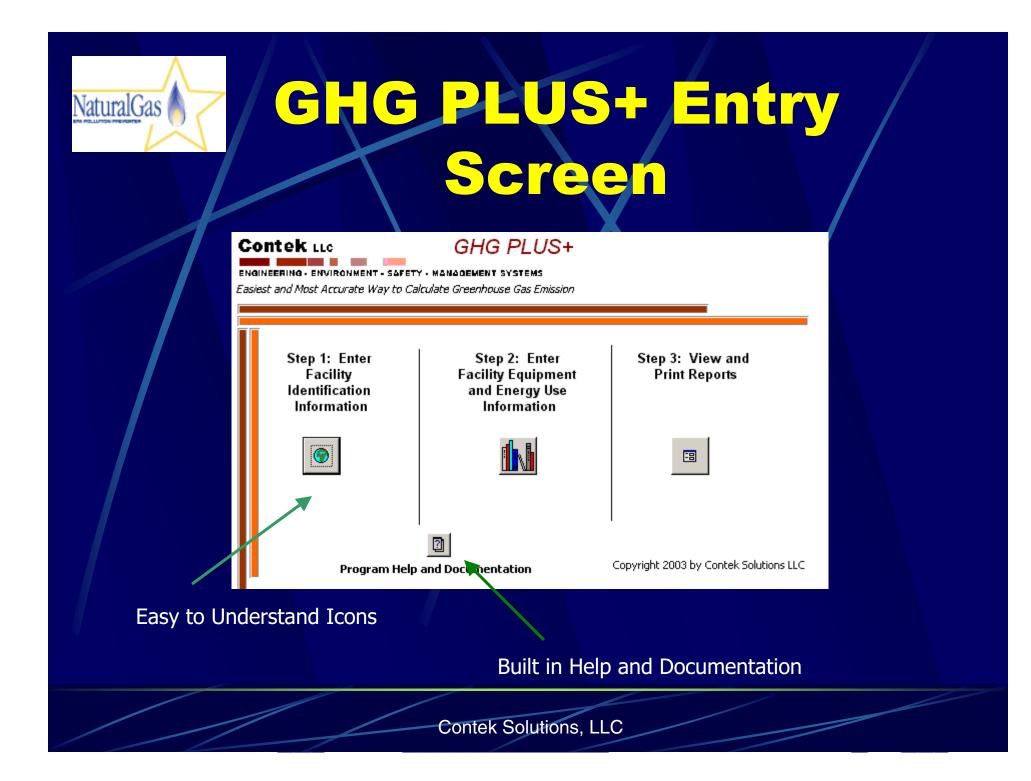


# **"Wish List" for "Next" Generation Programs**

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



# **Facility Input Screen**

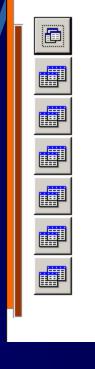
#### Facility Information Input Form

NaturalGas 💧

	Property Code/Name Butane Year: 2003 YYYY	<u>•</u>	Program Help and Documentation	Home			
	Heaters Engines Flare Mobile	Misc Dehy Amine Tanks Loa	ding Pneu Devices Fugitive Mainter	nance Electricity			
1	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.						
		Butane Heaters					
	Enter Type of Fuel: Butane	Select Gas Analysis	if Known: 🛛 🛛 🕺 No Sample * 🔽				
	Method 1: Fuel Quantity and C	Units: Natural Gas MCFD;	$\checkmark$				
	Fuel Quantity: 1000	0 Diesel, Butane and Propane in Gallons	Click here to enter a new gas analys	is			
Easy to	Method 2: For Gas fired F	•	Present: Leave "Fuel Quantity" =0	and Enter the Following:			
use tabs	Duty, Absorbed Heat Rating	Percent Fired During Time Period	Trosent. Leave Tuer quality -0	, the Enter the Following.			
		D BTU/HR 0 %					
			Built in	Explanations			
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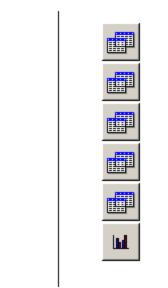


# Easy to Customize Reports and Graphs



#### ø Electricity Loading Engines Maintenance Misc Mobile Run Query Pneumatic Fugitives Tank Venting Dehydration Units Amine Units Flares Heaters Return

Reports



#### Summaries and Graphs



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# Built in Help and Documentation

	Help and Program	Information from the API					
	I Heaters	Tank Venting					
	I Engines	2 Loading	API Synopsis in Adobe Acrobat				
	I Flares	Pneumatic					
	👔 Mobile	Pugitives					
	Misc	Maintenance					
	Dehydration Units	Electricity					
	Mine Units	👩 General					
	Return Home 🖪 Return to Input Form						
		Contek Solutions, LLC					
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Greenhouse Gas Reports	
All Property Codes 2002 💌 1st Quarter 💌 All Persons 💽 Search 🗼 < 1 of 213 > >	New Property GHG HOME
INFORMATION ABOUT THE PROPERTY         PROPERTY NAME       ARCO "AB4" 1       PROPERTY CODE       622105000         QUARTER       1       YEAR       2002       COMPLETED BY       ALTON CALLIHAN	
PRODUCTION AND WELL INFORMATION COMPRESSOR DATA	
BOPD 0 GAS WELLS 0 NUMBER OF COMPRESSORS 0	-
OIL GRAVITY 25 INJ/DISP WELLS 0 COMPRESSORS THROWS 0	
BWPD OTHER WELLS 0	
MCFD GAS GRAVITY 1 DIESEL FUEL USED	
OIL WELLS	
TREATERS     FWKOS       TREATERS TOTAL NO     0       TREATERS BURNER RATING BTU/HR     0       TREATERS % RUN TIME     0       FWKO % RUN TIME     0       TREATERS, BOILERS AND OTHER FIRED VESSELS     OTHER LEASE EQUIPMENT       HEATERS TOTAL NO     0       SEPARATORS, ETC TOTAL NO     0	
HEATERS TOTAL BTU/HR OIL TANKS, NUMBER 2	-
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#### 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