

# Power Income Fund



Presentation:  
**Section 29 & Section 45 Production Tax Credit issues for Financiers,  
Developers & Operators of new & existing LFG facilities**

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**Topic: Section 29 & Section 45 Production Tax Credit Issues for Financiers, Developers & Operators of new & existing LFG facilities**

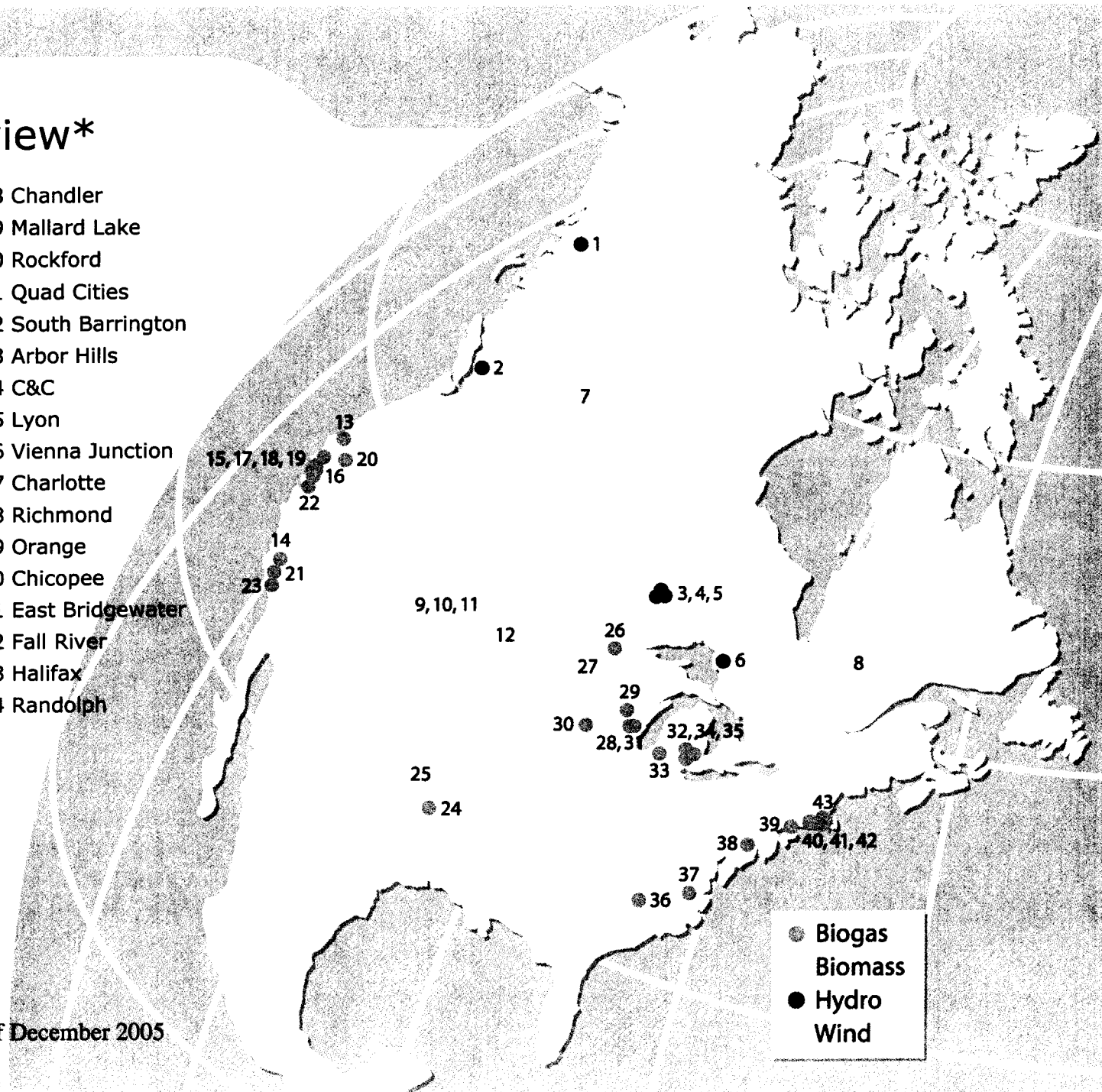
- 1.) Who is GRS / Clean Power?
- 2.) What are PTC's? What is Section 29 & Section 45?
- 3.) What are the structure, economics and differences between 29 & 45?
- 4.) Identify the central/critical issues surrounding eligibility of existing and new LFG sites for 29 & 45
- 5.) Can a Section 45 tax credit be claimed if new gas runs through the same blower for older sections where gas qualified for Section 29 credits?
- 6.) Recourse - IRS Private letter rulings (precedent)
- 7.) Brainteaser
- 8.) Conclusions

<b>Technology</b>	<b># of Facilities</b>	<b>Installed Capacity</b>	<b>% 2004 Cashflow</b>
Biomass	2	55 MW	23%
Hydro	6	36 MW	26%
Wind (35% interest)	6	100 MW	9%
Biogas	28	147 MW	42%
	<b>42</b>	<b>347 MW</b>	
<b>Additions: not yet constructed</b>			
Wind	1	99 MW	Erie Shores Project
		<b>446 MW</b>	

# Facilities Overview\*

- |                          |                     |
|--------------------------|---------------------|
| 1 Hluey Lakes            | 28 Chandler         |
| 2 Sechelt                | 29 Mallard Lake     |
| 3 Dryden/Wainwright      | 30 Rockford         |
| 4 Dryden/Eagle River     | 31 Quad Cities      |
| 5 Dryden/Mackenzie Falls | 32 South Barrington |
| 6 Wawatay                | 33 Arbor Hills      |
| 7 Whitecourt             | 34 C&C              |
| 8 Chapais                | 35 Lyon             |
| 9 Foote Creek II         | 36 Vienna Junction  |
| 10 Foote Creek III       | 37 Charlotte        |
| 11 Foote Creek IV        | 38 Richmond         |
| 12 Peetz Table           | 39 Orange           |
| 13 American Canyon       | 40 Chicopee         |
| 14 Coyote Canyon         | 41 East Bridgewater |
| 15 Guadalupe             | 42 Fall River       |
| 16 Menlo Park            | 43 Halifax          |
| 17 Newby Island I        | 44 Randolph         |
| 18 Newby Island II       |                     |
| 19 Newby Island III      |                     |
| 20 Sacramento            |                     |
| 21 San Marcos            |                     |
| 22 Santa Cruz            |                     |
| 23 Sycamore I            |                     |
| 24 Sycamore II           |                     |
| 25 Sunset Farms          |                     |
| 26 Big Springs           |                     |
| 27 Pine Bend             |                     |

\* As of December 2005

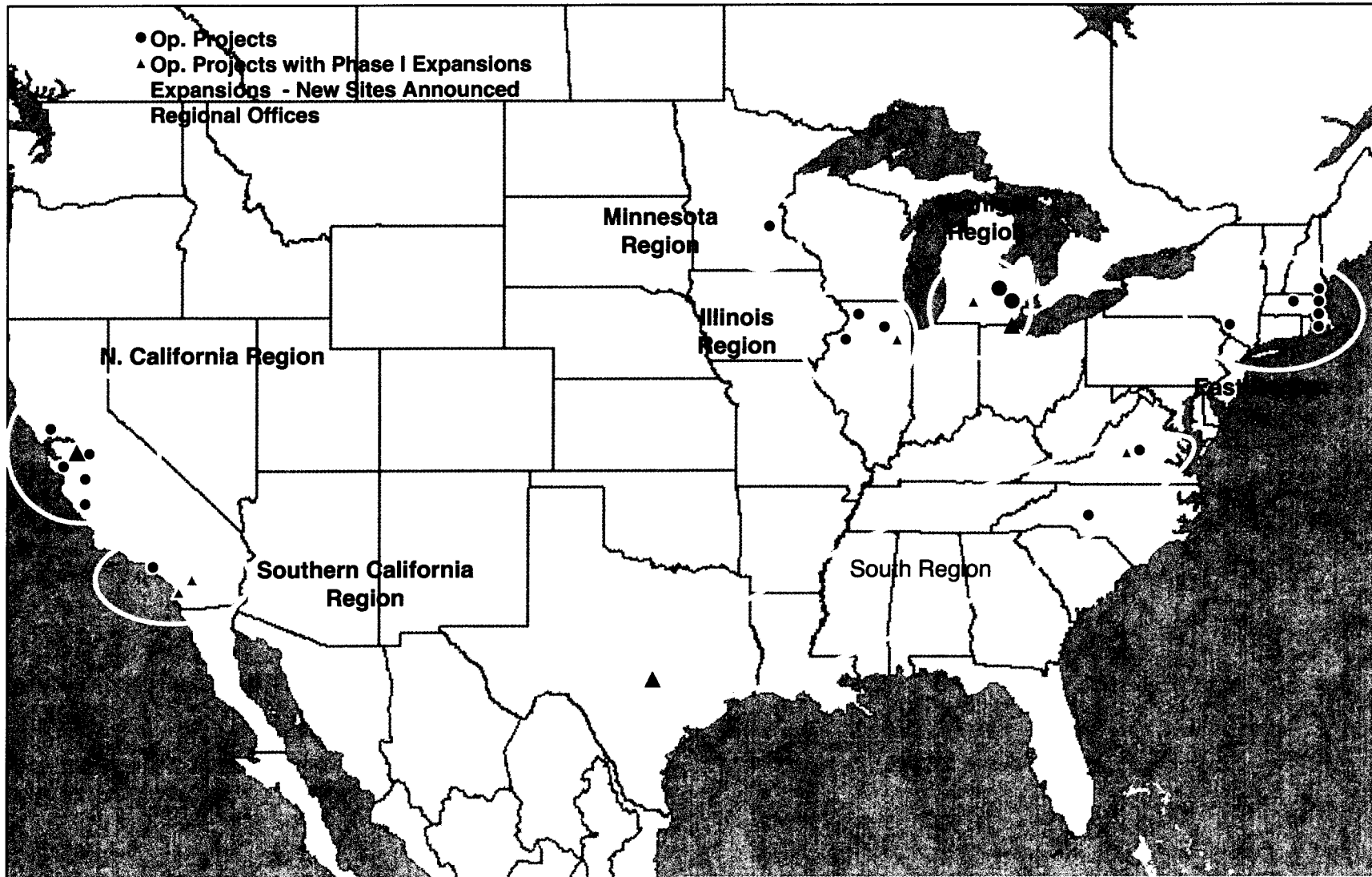


●	Biogas
●	Biomass
●	Hydro
●	Wind

Number of Facilities	MW	Average S&P Rating of Purchasers	Average PPA Term
29 in the US: 12 in California 4 in Illinois 4 in Michigan 5 in Massachusetts 4 in 4 other States	147	AA to BBB-	15

- **Gas Recovery Systems, LLC (GRS) is the one of the largest independent, full-service landfill gas development company in North America.**
- **GRS develops integrated landfill gas recovery, processing and power generation systems throughout the US.**
- **GRS currently sells approximately 95% of its power output to a diverse group of public and municipal utility customers under long-term Power Purchase Agreements (PPAs). The remaining power generated by the Company is sold into the open markets on a merchant basis.**
- **GRS is headquartered outside San Francisco in Livermore, California. The Company maintains a regional office in Ann Arbor, Michigan.**
- **With over 22 years of operating history in landfill gas production, processing and related electric generation, GRS has one of the most experienced landfill gas conversion teams in the world.**

# GRS Operations



GRS owns and /or operates 29 landfill gas utilization systems which annually produce more than 16 million MMBTUs of landfill gas a year as fuel for the company's 26 electric generation facilities which have a combined total net deliverable capacity of 120 megawatts.

In addition, GRS owns and operates three medium BTU conversion plants which process landfill gas for direct sales to local industrial and commercial customers.

GRS owns and operates a variety of technologies in its landfill gas power plants. These technologies are listed as follows;

**COMBINED CYCLE – 47 MW (net)**, 8 landfill gas fired turbines with associated heat recovery and steam turbines at three facilities in Michigan, Illinois and Minnesota.

**SIMPLE STEAM CYCLE – 20 MW (net)**, 1 boiler and steam turbine in Irvine, CA.

**RECIPROCATING ENGINE – 41 MW (net)**, Over 40 Cooper-Superior, Waukesha and Caterpillar engines in 6 states, including 16 in the San Francisco Bay Area.

**GAS TURBINE – 12 MW (net)**, 5 Solar Taurus and Saturn turbines in three states. One Saturn has operated at the City of Santa Cruz landfill since 1989.

## Original

### Original Section 29:

Worth about 70% to 75% of the Capital Cost of a project over 1st 10 yrs

### Original Section 45:

1.8 Cts / kWh for 1st 10 Yrs

***Not for LFG!!!***

Can't use 29&45 together

### Section 29

- Section 29 was first introduced in 1979 - and has been extended many times. The credit arises from the sale of 'qualified fuel' to an unrelated third party. The credit is expressed as \$ / barrel of oil equivalency, or in \$ / mmbtu.
- For example, on a 3MW site, over the first ten years of project service, this credit would be worth about 70% to 75% of the capital cost.
- Section 29 expired in 1999, with the credit still available to some existing facilities until December 31, 2007

### Section 45

- Congress authorized Section 45 for wind power and later added Close Looped Biomass and Poultry. The credits are worth approx. 1.8 cents / kWh U.S. and are available for the first ten years of production. Section 45 PTC's are set to expire for projects placed in service after December 31, 2003
- Major difference between the two tax credits - Section 29 arises from the sale of 'qualified fuel', whereas Section 45 is based upon the amount of electricity produced and sold to an un-related person, and the credit is expressed in \$ / kWh.



Year	IRS Multiplier	Value of Credit	
		\$ / BOE	\$ / MMBTU
1979	1.0000	\$3.0000	\$0.5172
1980	1.0896	\$3.2688	\$0.5636
1981	1.1900	\$3.5700	\$0.6155
1982	1.2676	\$3.8028	\$0.6557
1983	1.3197	\$3.9591	\$0.6826
1984	1.3673	\$4.1019	\$0.7072
1985	1.4211	\$4.2633	\$0.7351
1986	1.4555	\$4.3665	\$0.7528
1987	1.4949	\$4.4847	\$0.7732
1988	1.5483	\$4.6449	\$0.8008
1989	1.6069	\$4.8207	\$0.8312
1990	1.6730	\$5.0190	\$0.8653
1991	1.7835	\$5.3505	\$0.9225
1992	1.8430	\$5.5290	\$0.9533
1993	1.8918	\$5.6754	\$0.9785
1994	1.9207	\$5.7621	\$0.9935
1995	1.9439	\$5.8317	\$1.0055
1996	1.9837	\$5.9511	\$1.0261
1997	2.0331	\$6.0993	\$1.0516
1998	2.0384	\$6.1152	\$1.0543
1999	2.0013	\$6.0039	\$1.0352
2000	2.0454	\$6.1362	\$1.0580
2001	2.0917	\$6.2751	\$1.0819
2002	2.0606	\$6.1818	\$1.0658
2003	2.1170	\$6.3510	\$1.0950

Note:  
1 BOE = 5.8 MMBTU (HHV)

**Given:**

- Flow rate = 1,200 scfm of LFG
- 400 scfm = 1 MW, therefore 3 MW plant
- “All In” 3 MW plant capital cost = \$1,600 / MW = \$4.8 M
- Average Methane Concentration = 51%
- Operational Hours of Equipment = 7,881 per year (90% C.F.)
- Tax credit value = \$6.351 / BOE (2003)
- 1 BOE = 5.8 MMBTU's
- Heat Value of CH<sub>4</sub> = 1,102.32 BTU / scf

**Calculation:**

$$1,200 \text{ scf/min} * 60 \text{ min. / hr.} * 7,881 \text{ / yr.} * 51\% \\ * 1,102.32 \text{ BTU / scf} / (1,000,000 \text{ BTU / MMBTU}) \\ / (5.8 \text{ MMBTU / BOE}) * \$6.351$$

$$= \$349,306 \text{ / year for 10 years} = \$3,493,058$$

**This represents about 73% of the total capital cost of the facility**

Source: Shaw EMCON/OWT, Inc.

On August 8, 2005, the Energy Policy Act of 2005 was signed into law. This legislation:

- 1.) Includes provisions for renewed and expanded tax credits for landfill gas
- 2.) Provides bond financing, tax incentives, grants, and loan guarantees
- 3.) Extends renewable energy production incentives to landfill gas

### **Renewable Electricity Production Credit**

- Originally signed into law on October 22, 2004 as H.R. 4520, the American Jobs Creation Act of 2004,” is a corporate tax measure containing an expanded Section 45 tax credit for LFG electricity generating facilities”
- Credit formerly only applied to wind and some biomass energy projects
- Under the American Jobs Creation Act of 2004, facilities producing electricity from landfill gas had to be placed in service by the end of 2005 to qualify for the tax credit - new law extends this for two years (through December 21, 2007)
- Additionally, tax credit period is extended to **ten** years for services placed in service after August 8, 2005. For LFG facilities placed in service after October 22, 2004 (enactment of the American Jobs Creation Act) and before August 8, 2005 - credit period is **five** years

#### **Proposed Section 45:**

Now includes LFG

1.8 Cts/kWh for 1st 10 Yrs

Can't use 29&45 together

The Energy Policy Act of 2005 re-designates Section 29 as new Section 45K

- The 2005 Act makes this credit part of the general business credit under section 38 of the IRS.
- By making the old section 29 credit part of the general business credit, tax payers will now combine the non-conventional source fuel credit with other general business credits.
- Credit amounts that exceed the taxpayer's tax liability can now be carried back one tax year or forward 20 tax years on the federal tax return.

### **Section 29**

- LFG collection system only - wells, blowers, filters, meter
- Not the beneficial use equipment
  - Not compression equipment, pipeline, etc.
  - Not electrical generation equipment

### **Section 45**

- Facility producing electricity from LFG
- Genco - power plant only

**Given:**

- Flow rate = 1,200 scfm of LFG
- 400 scfm = 1 MW, therefore 3 MW plant
- “All In” 3 MW plant capital cost = \$1,600 / MW = \$4.8 M
- Average Methane Concentration = 51%
- Operational Hours of Equipment = 7,881 per year (90% C.F.)

**Calculation:**

$$= 3,000 \text{ kW} \times 8,760 \text{ hrs} \times 90\% \times \$0.018 / \text{kWh}$$

$$= \$425,736 / \text{year for 10 years} = \$4,257,360$$

**This represents about 89% of the total capital cost of the facility**

The Section 45 PTC is eliminated if the facility produces electricity from landfill gas and has already received a credit under section 29 for the taxable year or for any prior taxable year.

Many unanswered questions remain as to how this section will be interpreted.

**Can a tax credit be claimed if new gas runs through the same blower for older sections where gas qualified for section 29 credits?**

**Arguments:**

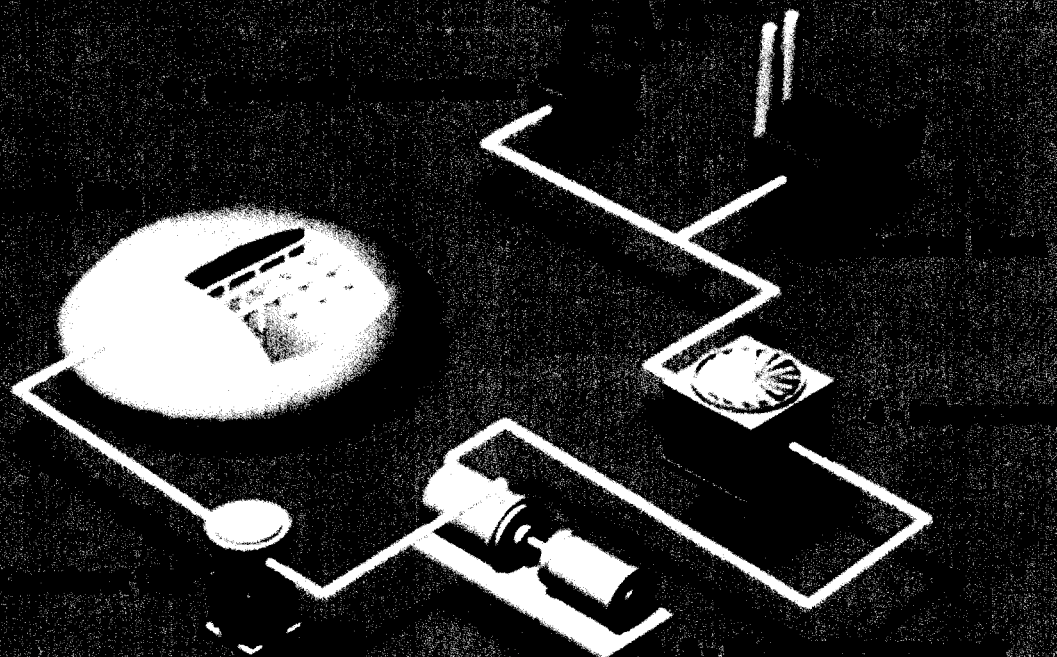
- 1.) Gas Supply**
- 2.) "80 / 20" Rule for Capital Costs**

## **Can a tax credit be claimed if new gas runs through the same blower for older sections where gas qualified for Section 29 credits?**

### **Facts:**

- Power Plant - operating since 1988, 50 LFG wells, and Headers Installed in 1988.  
**Full Utilization of Section 29**
- 25 additional LFG wells & Laterals installed in October 2005
- Capital Cost for 3.3 MW (Gross) or 2.7 MW (Net) Plant = \$4.0M (\$1,481 / kW)
- The existing facility is comprised of three compressors 'feeding' three engines
- The three compressors are 'fed' by a large 'header' system - which is in turn 'fed' by a whole bunch of wells.
- Continue to install a bunch of wells that have NOT been used for Section 29 - the gas will be going through a large 'header' system which may have utilized section 29 in the past.
- To further complicate things, the 'header' system has been added to over the past number of years - so the 'old' (section 29) gas and the new gas will have co-mingled in the header system before going to the individual compressors - therefore difficult to 'ring fence' the project.
- The engineering manager states that they have put in about \$500k in total to the 'header' system over the past number of years (post section 29 eligibility). We should be able to pass a 'reasonable test' for qualification - but I am not a lawyer.





1. Landfill Site: LFG recovery is suitable for existing as well as future landfill sites. In existing sites, the gas is collected by installing vertical wells every 150 to 300 feet and connecting these vertical wells to a central processing station.
2. Knockout Unit: At the processing station, a Knockout Unit is used to screen out contaminants and free liquids suspended in the gas.
3. Blower/Compressor: The Blower/Compressor is used to create a partial vacuum in the system that causes the gas to migrate through the wells toward the processing station.
4. Intercooler: The Intercooler is used to reduce the temperature of the gas allowing residual moisture to condense.
5. At this point, the gas may be sold as a fuel source directly to an end-user such as an industrial plant.
6. Alternatively, it may be used to power generators that convert it into electrical energy for sale to the local power utility.

- **Existing Collection System**

- ✓ LFG From the 50 original wells installed qualified for Section 29 Tax Credits until end of 2002
- ✓ Each well = 50 scfm, therefore total LFG flow from 50 wells = 2,500 scfm
- ✓ 500 scfm of 2,500 scfm total is flared

- **Aggressive Interpretation**

- ✓ Facility still qualifies for Section 45 for 10 years
- ✓ Accounting Challenge is to separate Flow from 1988 and 2005 wells

- **New Wells & Engine Added**

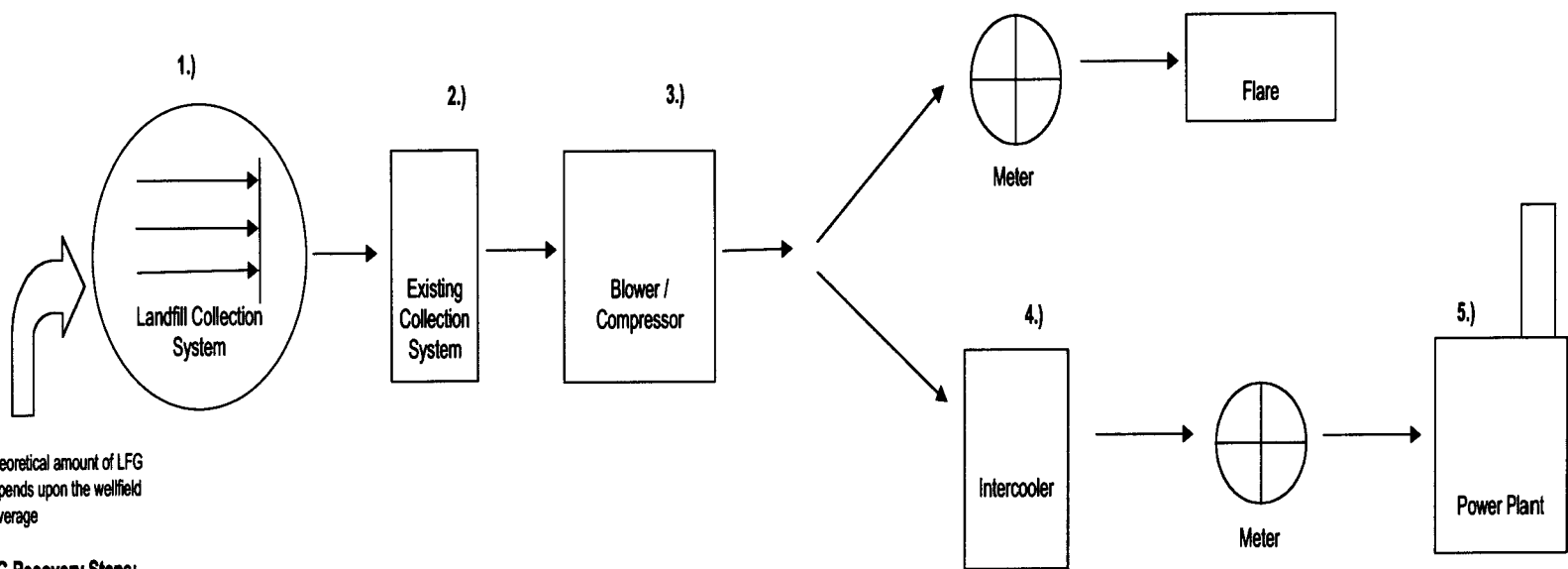
- ✓ LFG From the 25 new wells installed in October 2005
- ✓ Each well = 50 scfm, therefore total LFG flow from 50 wells = 1,250 scfm
- ✓ New 2 MW Engine requires 800 scfm
- ✓ Therefore, engine utilizes:
  - 800 scfm from new wells (enough gas from new wells)

- **Conservative Interpretation**

- ✓ LFG From the 50 original wells installed qualified for Section 29 Tax Credits until end of 2002
- ✓ Since the Company has taken Section 29 Tax Credits to support the Initial Project - not allowed to claim Section 45 for facility

## Schematic of Landfill Gas Recovery - Component Costs

**Example:**



- Theoretical amount of LFG depends upon the wellfield coverage

**LFG Recovery Steps:**

- a.) LFG collected from wells
- b.) At the knockout station, a Knockout Unit is used to screen out contaminants and free liquids suspended in the gas
- c.) The Blower / Compressor is used to create a partial vacuum in the system that causes the gas to migrate through the wells toward the processing station
- d.) The LFG will either go to the flare - to be combusted, or will continue on to the intercooler
- e.) The Intercooler is used to reduce the temperature of the gas allowing residual moisture to condense

	\$	% of Total
1.) Blower / Compressor	\$900,000	23%
2.) Intercooler / reefer unit	\$300,000	8%
3.) Prime Mover	\$2,000,000	50%
4.) Building / Construction Costs	<u>\$800,000</u>	<u>20%</u>
<b>Total</b>	<b>\$4,000,000</b>	<b>100%</b>

- Size of Power Plant  
- Maximum flow rate of LFG

**IRS Ruling provided that:**

"A facility would also qualify as originally placed in service, even though it contains some used property, provided the fair market value of the used property is not more than 20 percent of the facility's total value (the cost of the new property plus the value of the used property)."

"If the refurbishment done by the client equals or exceeds in cost 80% of the facility's total value (as computed per the Revenue Ruling), it should be treated as "originally placed in service" by the client for purposes of the definition of a "qualified facility" in Section 45(d) of the Code"

	<u>\$</u>	<u>% of Total</u>
1.) Blower / Compressor	\$900,000	23%
2.) Intercooler / reefer unit	\$300,000	8%
3.) Prime Mover	\$2,000,000	50%
4.) Building / Contruccion Cots	<u>\$800,000</u>	<u>20%</u>
<b>Total</b>	<b>\$4,000,000</b>	<b>100%</b>

Core from refurbed ("zero" houred) turbine unit = \$200,000

Then  $\$200,000/\$4,000,000 = 5.0\%$

- **Legal precedents** - sufficiently similar to a 1996 Private Letter Ruling (“PLR”) - stands a reasonable chance of success
- In July 2005, the Energy Bill and Technical Corrections Bill were pending and, as a result, asking for a Private Letter Ruling would not be accepted by the Service
- Now that the Energy Bill has been enacted without resolving the issue and the Technical Corrections Bill has continued to move forward, also without addressing the issue, the Service may consider a PLR
- Send the IRS a one or two page memo explaining why a PLR is appropriate for consideration in this case and they would let you know "officially"
- **PLR Cost:** - typically would take a law firm about 3 - 4 weeks to prepare a memo - Then wait for 7 to 8 mths for results back from IRS

# Brain teaser

- **Existing Collection System**

- ✓ LFG From the 50 original wells installed qualified for Section 29 Tax Credits until end of 2002
- ✓ Each well = 50 scfm, therefore total LFG flow from 50 wells = 2,500 scfm
- ✓ 500 scfm of 2,500 scfm total is flared

- **New Wells & New Turbine Added**

- ✓ LFG From the 25 new wells installed in October 2005
- ✓ Each well = 50 scfm, therefore total LFG flow from 25 wells = 1,250 scfm
- ✓ New 4 MW Turbine requires 1,600 scfm
- ✓ Therefore, Turbine utilizes:
  - 1,250 scfm from new wells
  - 350 scfm from existing wells (flared)

-----  
1,600 scfm total

- ✓ **Question: does the facility generate a Section 45 tax credit? If so, for how much?**

## **Conclusions:**

- **Code was written with few details**
- **IRS Private Letter Ruling have revealed some direction**
- **Clarifications are still needed**
- **Numerous interpretations exist**
- **Get a good tax attorney**