DISTRIBUTED GENERATION TECHNOLOGIES

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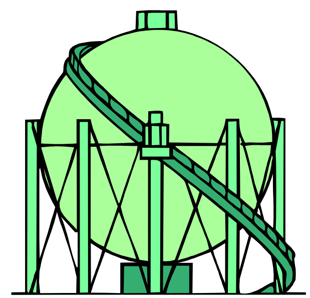
New Technology Platform

Exclusively Licensed – Patent Pending

Wastewater Treatment

Food Processing

Animal Processing Facilities

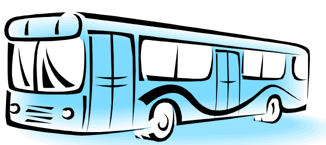


DGT Reactor

Up to 99.9% Pure Compressed Methane

Stationary Generation

(Fuel Cells)



Fleet & Consumer Transportation

Catalyzing the Future of Renewable Energy

Core Science Breakthrough

DGT Reactor Converts Organic Material to Methane Gas (Biogas)

Competitive Advantages

- Comparable waste treatment value for organic waste streams
- Pure methane gas - 99.9% vs. 50%
- High pressure output - $10 vs. $1.50 per unit
- Turns cost center into revenue center

Status

- Exclusive license to DGT from Cornell University
- Cornell Research team leading secondary proof-of-concept testing in Summer 2004
- Applying for over $1.5 M public and private grants
- Seeking JV for R&D and manufacturing & $500K angel investment

Profitability in Year 4 & Liquidity Events in year 2 & 4

DISTRIBUTED GENERATION TECHNOLOGIES

Phase Marketing Entry Strategy

Market Entry – Wastewater Treatment

- Treat organic wastes & produce CNG as Transport Fuel
- US $50 Billion wastewater equipment market in U.S. in next five years
- Sublicense with existing player

Market Expansion – Confined Animal Feeding Operations (CAFO)

- 450,000 CAFO in U.S.
- US $1B in 2002 Farm Bill to fund advanced manure management technology
- 2.7 Trillion lbs. manure/year representing US $3.2 Billion electricity
- JVs to facilitate manufacturing, distribution, marketing, & sales

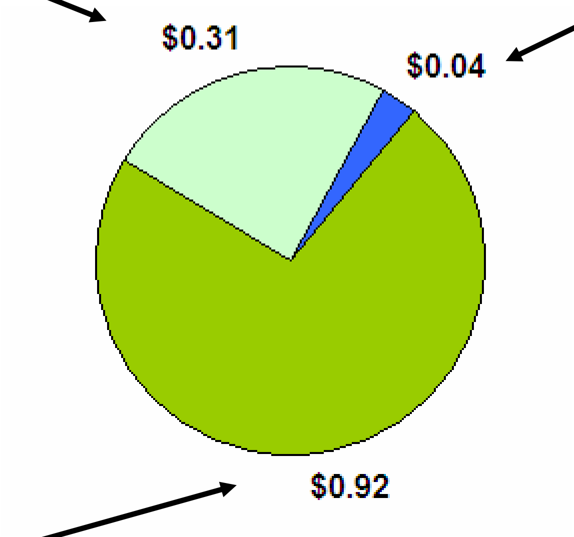
Mass Market Product – Small Scale Reactor and Fuel Cell

- Renewable energy/waste treatment appliance
- Unlimited potential in developed and developing economies
- JVs to facilitate manufacturing, distribution, marketing, & sales

SROI Overview

Reduction in Methane Release

Increased Municipal Income



Reduction in Gasoline Use

Total Social Return	**$1.25 per $1 cost**
Economic Return	**$5.74 per $1 cost**

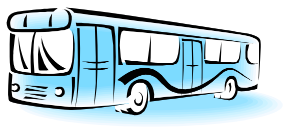
Reduction in Gasoline Use - Introduction

Natural Gas Combusts Cleaner then Gasoline (U.S. DOE)

25% reduction in greenhouse gas emissions
20% reduction in tailpipe emissions of carbon dioxide
Up to 95% reduction in fine airborne particle pollution
Up to 60% reduction in emission of oxides of nitrogen (NOX)
Reduction of carbon monoxide emission by as much as 20%

Average 44% Reduction in Environmental and Social Impact

Our analysis calculates the net benefit between Natural Gas and Gasoline



Natural Gas → **44% fewer impacts**

Gasoline → **Significant impact**

DGT SROI Reports Delta (net gain)

Reduction in Gasoline Use - Calculations

Figure 1: Estimated Tax Subsidies per Gallon of Gasoline in the U.S.*

Description	midpoint of estimated value per gallon	notes / source
Percentage depletion allowance	0.0089	ILSR/Greenpeace, based on data from U.S. Treasury Department and the Joint Committee on Taxation
Non-conventional fuel production credit	0.0084	ILSR and FOE
Expensing of exploration and development costs	0.0023	ILSR; Greenpeace; FOE
Enhanced Oil Recovery Credit	0.0006	ILSR; FOE
Foreign tax credits	0.0226	Jenny Wahl, Institute for Local Self Reliance, 1996; Koplow and Martin, Greenpeace, 1998
Foreign income deferral	0.0025	ILSR; Greenpeace
Accelerated depreciation allowances	0.0276	ILSR; Greenpeace; FOE
State piggyback tax effect	0.0022	Greenpeace; ILSR
State and local under taxation	0.0241	Loper; UCS
New tax subsidies	0.0207	Greenpeace
Total estimated tax subsidies per gallon of gasoline	**12 cents**	

*Calculated from applicable data reported by the Center for Technology Assessment

Reduction in Gasoline Use - Calculations

Figure 2: Estimated Government Program Subsidies of the Gasoline Industry*

Description	midpoint of estimated value per gallon	notes / source
Government R&D programs supporting petroleum technology	0.0021	OMB budget estimates 1997/98
Export financing subsidies	0.0031	Greenpeace and UCS
Army Corp of Engineers subsidies	0.0052	U.S. Army Corp of Engineers, Waterborne Commerce of the U.S.; Greenpeace
Department of Interior management programs to support access to oil resources	0.0032	Greenpeace
Regulatory oversight, response to oil contamination and liability prevention	0.0271	Greenpeace; EPA
Total estimated program subsidies per gallon of gasoline	**4 cents**	

*Calculated from applicable data reported by the Center for Technology Assessment

Figure 3: Estimated Protection Costs of U.S. Oil Industry*

Description	Midpoint of estimated value per gallon	notes / source
Cost of oil defense subsidies	0.7583	ILSR; Greenpeace; Ravenal, and Defense Technical Information Center.
Maintenance cost of U.S. Strategic Petroleum Reserve	0.0571	IISR; Greenpeace; U.S. Department of Energy
Other estimated protection costs (Coast Guard shipping lane protection, applicable shipping subsidies, etc.)	0.0057	Greenpeace
Total estimated applicable protection costs per gallon for U.S. oil industry	**82 cents**	

***Calculated from applicable data reported by the Center for Technology Assessment**

Reduction in Gasoline Use – Calculations

Figure 4 - Estimated Environmental, Health, & Social Costs of Gasoline Usage*

Description	midpoint of estimated value per gallon	notes / source
Increased annual health costs from gasoline vs. renewable natural gas pollution	1.7942	reduced by 44% to account for possible similar social costs caused by natural gas use; sources: Union of Concerned Scientists; Delucchi, 1998
Crop damage due to gasoline use vs. renewable natural gas pollution	0.0208	reduced by 44% to account for possible similar social costs caused by natural gas use; sources: ILSR; EPA; Delucchi, 1998
Building damage due to gasoline use vs. renewable natural gas pollution	0.0714	reduced by 44% to account for possible similar social costs caused by natural gas use; source CTA
Annual cost of climate change due to gasoline use vs. renewable natural gas pollution	0.1009	reduced by 44% to account for possible similar social costs caused by natural gas use; sources IPCC; EESI; Paul Rauber;,1997; ILSR; Delucchi; UCS
Annual cost of oil spills	0.0221	Litman; Greenpeace; Chernick and Caverhill; Lee
Total estimated applicable environmental and social costs per gallon of gasoline use	**2.01**	

*Calculated from applicable data reported by the Center for Technology Assessment

Reduction in Gasoline Use - Conclusion

Figure 5: Summary of Reduced Gasoline Social Costs due to DGT Reactor Use

Description	estimated cost savings per cubic foot of reactor
Tax Subsidization of the Oil Industry	0.59
Government Program Subsidies	0.20
Protection Costs Involved in Oil Shipment and Motor Vehicle Services	4.02
Environmental, Health, and Social Costs of Gasoline Usage	9.85
Total estimated savings per cubic foot of DGT Reactor	**14.65**

$ 42.5 Million in Social Returns = $.92 of every $1.00 in cost

Reduction in Methane Release

Methane is 21 times as effective a greenhouse gas compared to CO_2
US EPA and the Dept. of Environment, Food and Rural Affairs, London

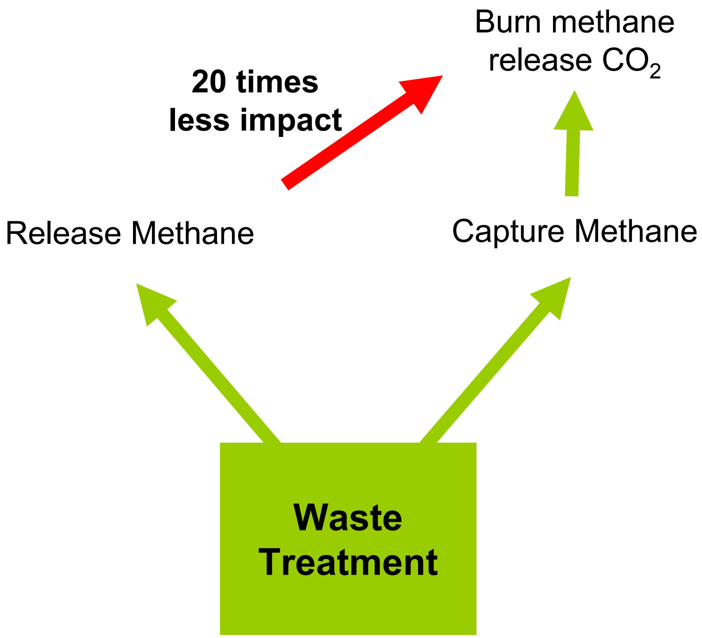


Figure 6: Estimated Cost of CO_2 Release (per Ton)

midpoint of estimated value per ton	notes / source
8.50	European Commission DG Environment - Frankhauser
6.00	Tellus Institute 1998
4.00	European Commission DG Environment – Frankhauser2
44.00	ACT - Advanced Control Technologies
18.00	MCT - Mixed Control Technologies
21.80	Chernick 1989
18.35	Nordhaus 1989
56.00	Steinberg and Cheng 1985
22.08	**Average Estimate of CO_2 Cost per Ton**

$ 14.3 Million in Social Returns = $.31 of every $1.00 cost

Increased Municipal Income

1. The DGT Reactor turns a municipal cost center to a revenue center with a 7 year payback.

2. Municipalities have more to spend on social and health services.

3. Not a 1 to 1 return – municipalities aren't 100% Efficient

4. Every dollar saved by a municipality generates on average 81 cents of social return

Figure 7: Estimated Municipal Efficiencies

Country	midpoint of estimated value	source
Belgium	66	Bosmans/Fecher, 1995
France	75	Dervaux, et al, 1994
USA	85	Burges/Wilson, 1993
Denmark	73	Holvad/Hougard, 1993
Belgium	91	Donni, 1994
Sweden	89	Bjurek et al., 1992
Belgium	94.5	Bouveroux et al., 1995
USA	74	Sexton et al., 1993
Netherlands	87	Kooreman, 1994
Belgium	81.5	Distexhe et al., 1994
USA	83.5	Wickoff/Livigne, 1991
Average Estimate	**81.7**	

$ 1.8 Million in Social Returns = $.04 of every $1.00 cost

SROI Standard Proforma

Two problems with the standard SROI analysis

DGT - Social Return on Investment	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**
New Cubic Feet of Generator Space	500	[illegible]	[illegible]	50,000	150,000	320,000	500,000	750,000	1,000,000	1,250,000
Cumulative Cubic Feet of Generation Space	500	[illegible]	[illegible]	62,500	212,500	532,500	1,032,500	1,782,500	2,782,500	4,032,500
Capital Cost of Generators Installed	70,882	283,529	1,417,647	7,088,235	21,264,705	45,364,704	70,882,350	106,323,525	141,764,700	177,205,875
Economic Return to Municipalities	74,000	444,000	444,000	444,000	444,000	444,000	444,000	444,000	444,000	2,294,000
Social and Environmental Benefits										
1. SocialValue of Reduction in Gasoline Use	7,325	[illegible]	[illegible]	915,625	3,113,125	7,801,125	15,126,125	26,113,625	40,763,625	59,076,125
2. Social Value of Methane Reduction	2,477	12,383	61,917	309,586	1,052,592	2,637,671	5,114,358	8,829,388	13,782,761	19,974,478
3. Municipal Social Return	60,680	364,080	364,080	364,080	364,080	364,080	364,080	364,080	364,080	1,881,080
Total Social and Environmental Benefits	70,482	413,088	609,122	1,589,291	4,529,797	10,802,876	20,604,563	35,307,093	54,910,466	80,931,683
Operating and Capital Costs										
Total operating expenses	394,800	818,820	1,192,480	1,436,200	2,225,800	3,444,400	5,524,100	10,041,000	16,637,600	26,386,400
Capital expenditures			2,000,000	10,000,000		3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
Total Operating and Capital Costs	394,800	818,820	3,192,480	11,436,200	2,225,800	6,444,400	8,524,100	13,041,000	19,637,600	29,386,400
Social Purpose Benefit Flow	[illegible]	(405,732)	(2,583,358)	(9,846,909)	2,303,997	4,358,476	12,080,463	22,266,093	35,272,866	51,545,283
Discount Rate	12%									
NPV of Social and Environmental Benefits	[illegible]									
NPV of Project Costs	[illegible]									
Benefit-Cost Ratio	[illegible]									
Social Purpose Value	38,579,241									
Enterprise Value +	222,423,306									
Long Term Debt -	0									
Blended Value	261,002,547									

Outputs

Outcomes

Problem 1 – discount rate fails to take into account variability in social return estimates

Problem 2 – double counting project costs

Solution 1 – Social Return Beta (β)

What is it?

Method to quantify variability in social return estimates

How is it Calculated?

$$SR(\beta) = \frac{\%\ \text{range of estimates}}{\#\ \text{of estimates}}$$

What is it Used for?

Calculate weighted average SR(β) for the company

Add total SR(β) to economic discount rate

Recalculate social returns to include variability

Example:

Figure 8: SR(β) For Municipal Efficiencies

Country	midpoint of estimated value
Belgium	66
France	75
USA	85
Denmark	73
Belgium	91
Sweden	89
Belgium	94.5
USA	74
Netherlands	87
Belgium	81.5
USA	83.5
% range of estimates	30.16
# of estimates	11
SR(β)	**2.7%**

Solution 1 – Social Return Beta (β) – Proforma

DGT - Social Return on Investment	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
New Cubic Feet of Generator Space	500	2,000	10,000	50,000	150,000	320,000	500,000	750,000	1,000,000	1,250,000
Cumulative Cubic Feet of Generation Space	500	2,500	12,500	62,500	212,500	532,500	1,032,500	1,782,500	2,782,500	4,032,500
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Social and Environmental Benefits										
1. SocialValue of Reduction in Gasoline Use	7,325	36,625	183,125	915,625	3,113,125	7,801,125	15,126,125	26,113,625	40,763,625	59,076,125
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Social Purpose Benefit Flow	(324,318)	(405,732)	(2,583,358)	(9,846,909)	2,303,997	4,358,476	12,080,463	22,266,093	35,272,866	51,545,283

Economic Discount Rate		12%
Social Return Beta	+	6.08%
Social Return Discount Rate		18.08%
NPV of Social and Environmental Benefits		50,944,542
NPV of Project Costs		40,739,[illegible]
Benefit-Cost Ratio		1.2[illegible]
Social Purpose Value		10,205,056
Enterprise Value	+	222,423,306
Long Term Debt	-	0
Blended Value		232,628,361

n=42

Add SR(β)
Add n for total number of sources

Recalculate NPV
Further discount of social and environmental returns

	SR Beta	Benefits	Weigted Value
Gasoline Use	4.32%	153,136,450	73.00%
Methane Reduction	11.61%	51,777,612	24.68%
Municipal Social Return	2.74%	4,854,400	2.31%
		Overall Social Return Beta	6.08%

Calculate weighted average total SR(β)

Problem 2 – double counting still exists

Solution 2 – Redefine Blended Value Equation

The Problem

Double counting of costs underestimates blended value in published equations:

Social Purpose Value (already has costs taken out)
+ Enterprise Value (also has costs taken out)
- Long Term Debt
= Blended Value

The Solution

Redefine blended value:

NPV Social and Environmental Benefits
+ Enterprise Value
- Long Term Debt
= Blended Value

Solution 2 – Redefining Blended Value – Proforma

DGT - Social Return on Investment	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
New Cubic Feet of Generator Space	500	2,000	10,000	50,000	150,000	320,000	500,000	750,000	1,000,000	1,250,000
Cumulative Cubic Feet of Generation Space	500	2,500	12,500	62,500	212,500	532,500	1,032,500	1,782,500	2,782,500	4,032,500
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Economic Return to Municipalities	74,000	444,000	444,000	444,000	444,000	444,000	444,000	444,000	444,000	2,294,000
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Economic Discount Rate		12%	
Social Return Beta	+	6.08%	n=42
Social Return Discount Rate		18.08%	
NPV of Social and Environmental Benefits		50,944,543	
NPV of Project Costs		40,739,488	
Benefit-Cost Ratio		1.25	
NPV of Social and Environmental Benefits		50,944,543	← **Take out double costs**
Enterprise Value	+	222,423,306	
Long Term Debt	-	0	
Blended Value		273,367,849	← **Higher Blended Value**

	SR Beta	Benefits	Weigted Value
Gasoline Use	4.32%	153,136,450	73.00%
Methane Reduction	11.61%	51,777,612	24.68%
Municipal Social Return	2.74%	4,854,400	2.31%
		Overall Social Return Beta	6.08%

Summary of Returns		return on $1
NPV Gas Benefits	42,519,829	$0.92
NPV Methane Benefits	14,376,559	$0.31
NPV Municipal Social Return	1,834,573	$0.04
Enterprise Value	266,338,326	$5.74

Sensitivity Analysis

10 Year Blended Value

	EBIDTA Multiples					Benefit Cost Ratio
Discount Rate	5	6	7	8	9	
14.00%	177M	204M	231M	257M	284M	1.23
13.00%	193M	222M	251M	280M	309M	1.24
12.00%	210M	242M	273M	305M	337M	1.25
11.00%	228M	263M	298M	332M	367M	1.26
10.00%	249M	287M	325M	363M	401M	1.27

Summary

Vision

Energy technology promoting social, environmental, and economic self reliance for communities worldwide

Financial, Social, and Environmental Returns

Profitability Year 4 & liquidity events possible Year 2 & 4
Decrease gasoline use
Decrease non-point source methane emissions
Increase municipal revenue

New Analysis

Two new metrics: **SR(β)** and **Redefined Blended Value**

	Standard Metrics	SR(β)	SR(β) and new Blended Value
Cost Benefit Ratio	1.95	1.25	1.25
Blended Value	261 M	233 M	273 M