

Climate Change Resolution

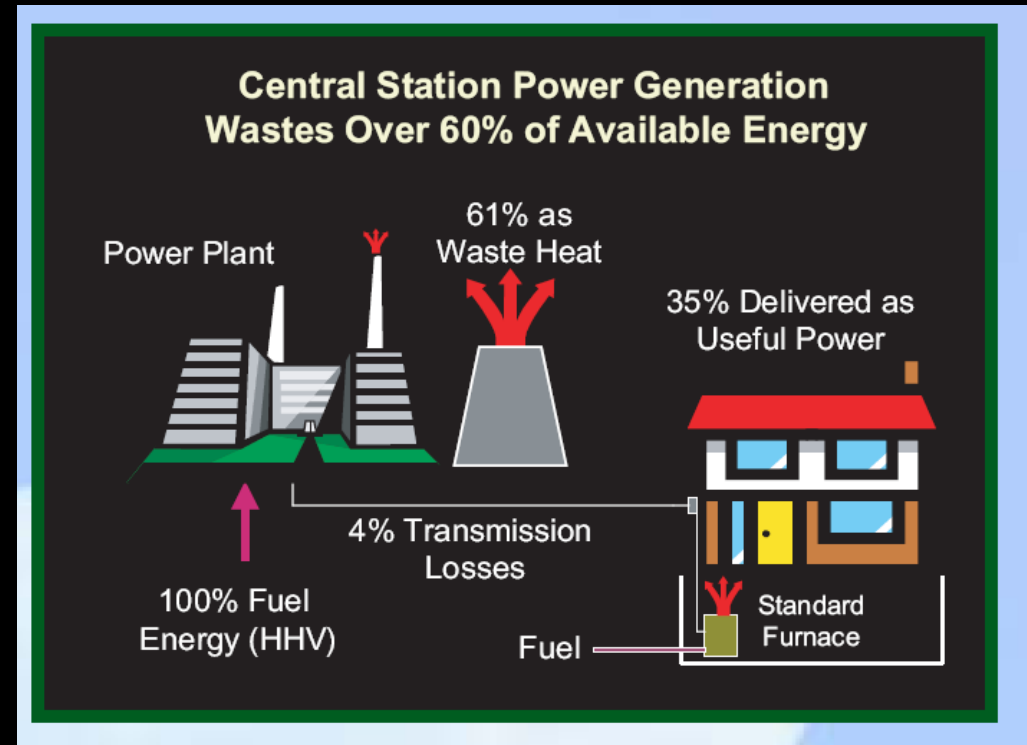


- “[C]onsider the appointment of a voluntary energy committee to recommend local steps to save energy and reduce emissions.”

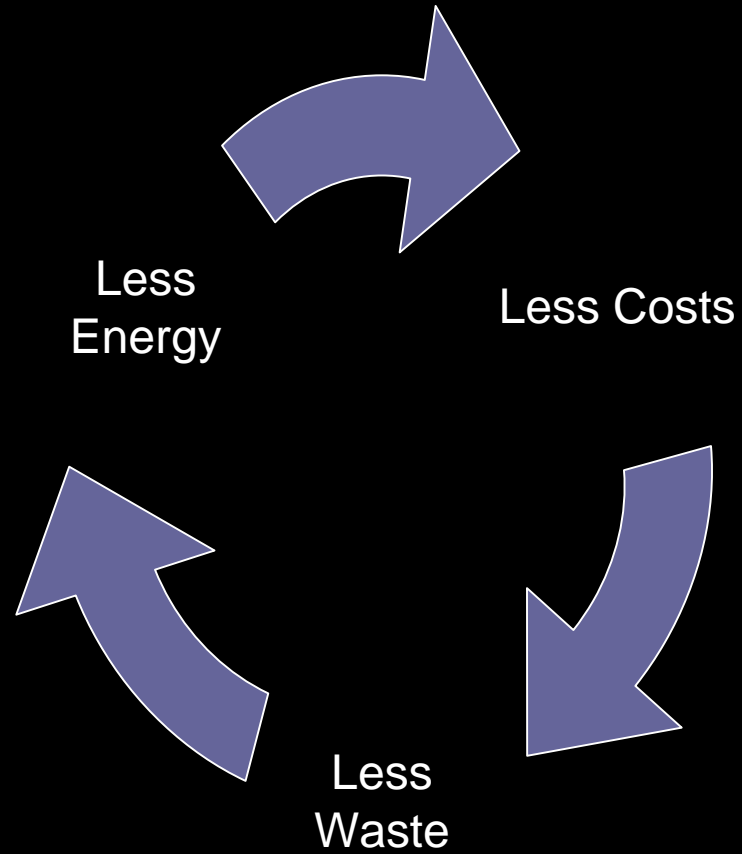
What's out there?



- Central Plants.
- Deregulation.
- Grid limited.
- No new plants.
- RPS Now!



Break it Down



Town as User.



■ Energy Use.

- Fuel
- Heat
- Electricity

■ \$ 161,441 oil

■ \$ 359,168 e

■ 1,683,273 lbs

■ Power of the Purse

- School
- Town

■ \$ 156,182

■ \$ 1,780,000

Do something.



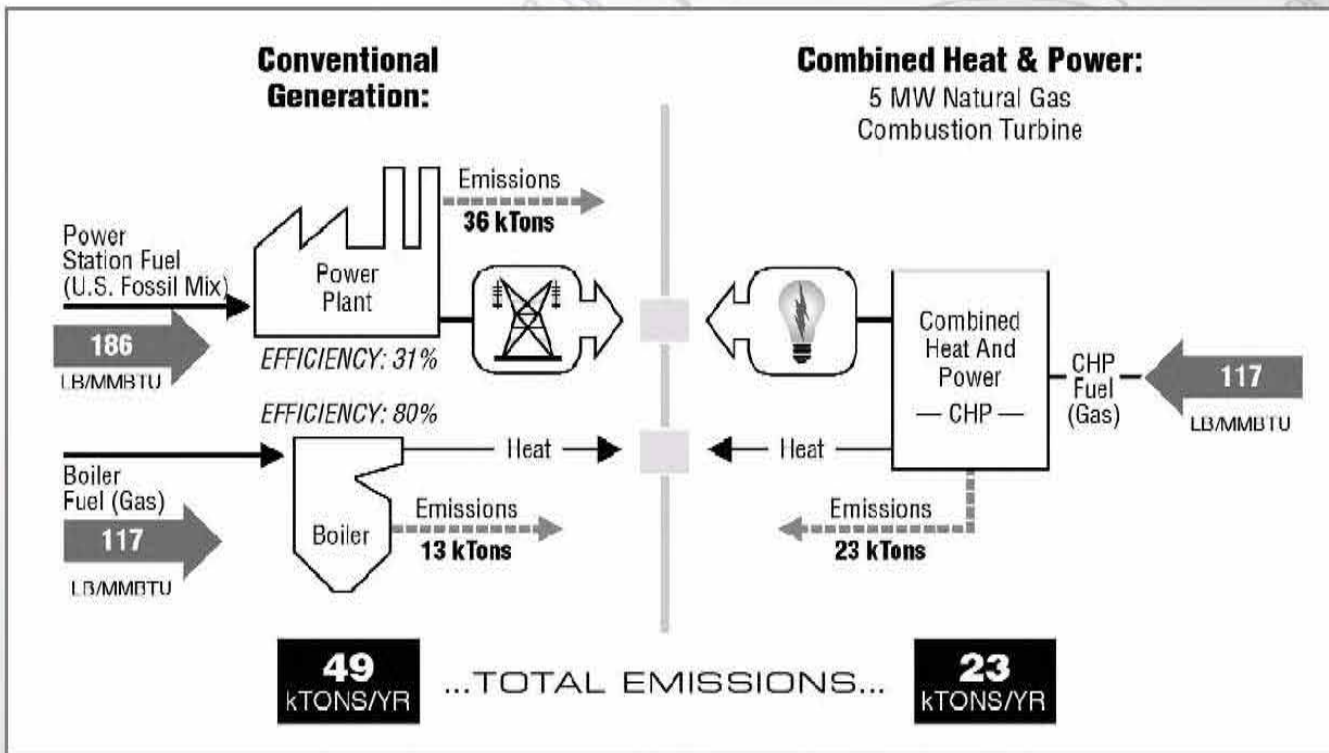
PLANNING

MUCH WORK REMAINS TO BE DONE BEFORE WE CAN ANNOUNCE
OUR TOTAL FAILURE TO MAKE ANY PROGRESS.

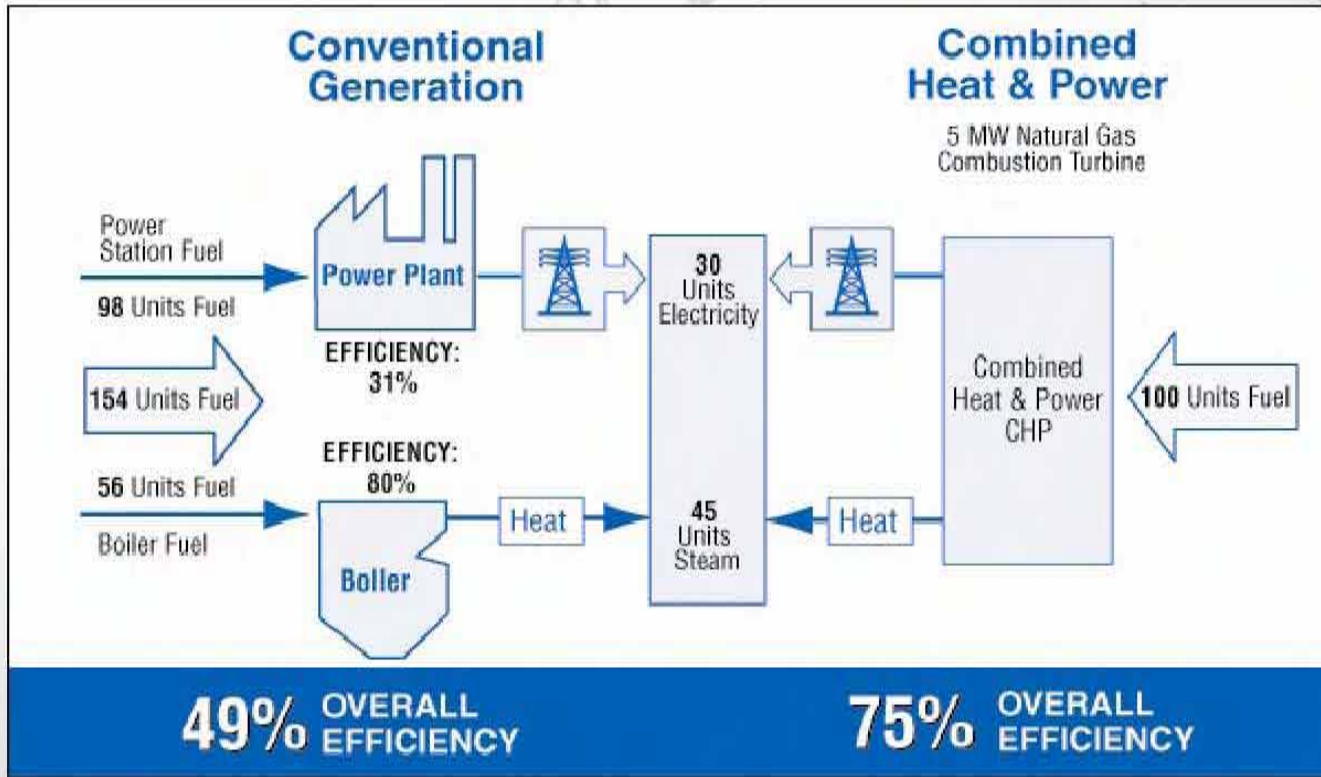
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- Energy Efficiency.
 - Clean up the user.
 - Tighten the building.
- Go crazy.
- Holistic Approach.

Environmental Benefits of CHP- CO₂ Example



Efficiency Advantages of CHP





Help build the world's

largest solar power plant
with your Blue Link,
and start adding clean,
renewable energy to
the grid today.

Earn a free Blue Link 

Bluelink 480



1 2 3

front side back view

Bluelink 480
960

Specifications

How It Works

Price

[concept](#)

[products](#)

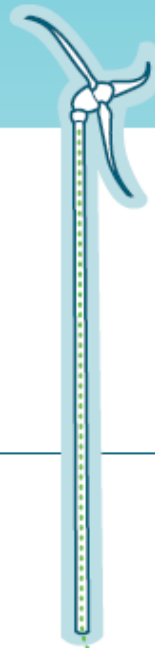
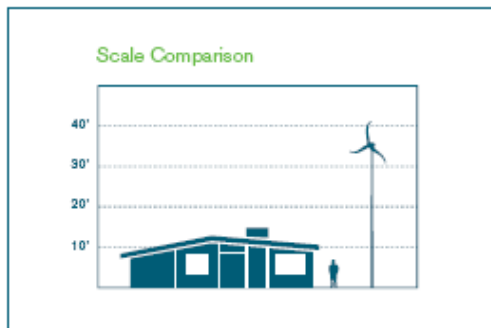
[company](#)

[news](#)

Solar
480 watts
35 years

Futures in
Energy.
\$4850

How Skystream Works



Wind
1.8 10mph
2.4 15mph

\$8,000

5 year warranty

CHP



- One fuel.
- Two uses.



- \$9,000 in Keyspan area.

Know this.



- Interconnection.
- Standby Rates.
- Net Metering.
- Islanding.
- Grid Parallel.



Analysis

- Tools for evaluation.
- RETScreen.



Natural Resources
Canada

Ressources naturelles
Canada



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RETScreen® International
Empowering Cleaner Energy Decisions

SOFTWARE & DATA TRAINING COURSE CASE STUDIES

▶ INFO

	Software & Data	User Manual	Engineering Textbook
Software & Data	Version 4	Coming soon	Coming soon
▼ Software & Data	Version 3	▼	▼
Introduction		--	<input type="checkbox"/> 2.8 MB
Wind Energy	Version 3.2	<input type="checkbox"/> 1.5 MB	<input type="checkbox"/> 0.9 MB
Small Hydro	Version 3.2	<input type="checkbox"/> 2.4 MB	<input type="checkbox"/> 1.1 MB
Photovoltaics	Version 3.2	<input type="checkbox"/> 1.7 MB	<input type="checkbox"/> 0.8 MB
Combined Heat & Power	Version 3.6	<input type="checkbox"/> 7.7 MB	<input type="checkbox"/> 4.5 MB
Biomass Heating	Version 3.1	<input type="checkbox"/> 1.7 MB	<input type="checkbox"/> 1.0 MB
Solar Air Heating	Version 3.1	<input type="checkbox"/> 1.5 MB	<input type="checkbox"/> 0.9 MB
Solar Water Heating	Version 3.1	<input type="checkbox"/> 2.1 MB	<input type="checkbox"/> 0.8 MB
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Ground-Source Heat Pumps	Version 3.1	<input type="checkbox"/> 2.1 MB	<input type="checkbox"/> 0.7 MB
Arenas & Supermarkets	Version Beta	<input type="checkbox"/> 4.8 MB	Coming soon
Simplified Analysis	Version OPA	<input type="checkbox"/> 0.3 MB	<input type="checkbox"/> 0.6 MB

21 Languages:

File available in English only

Managed by CETC-Varenes

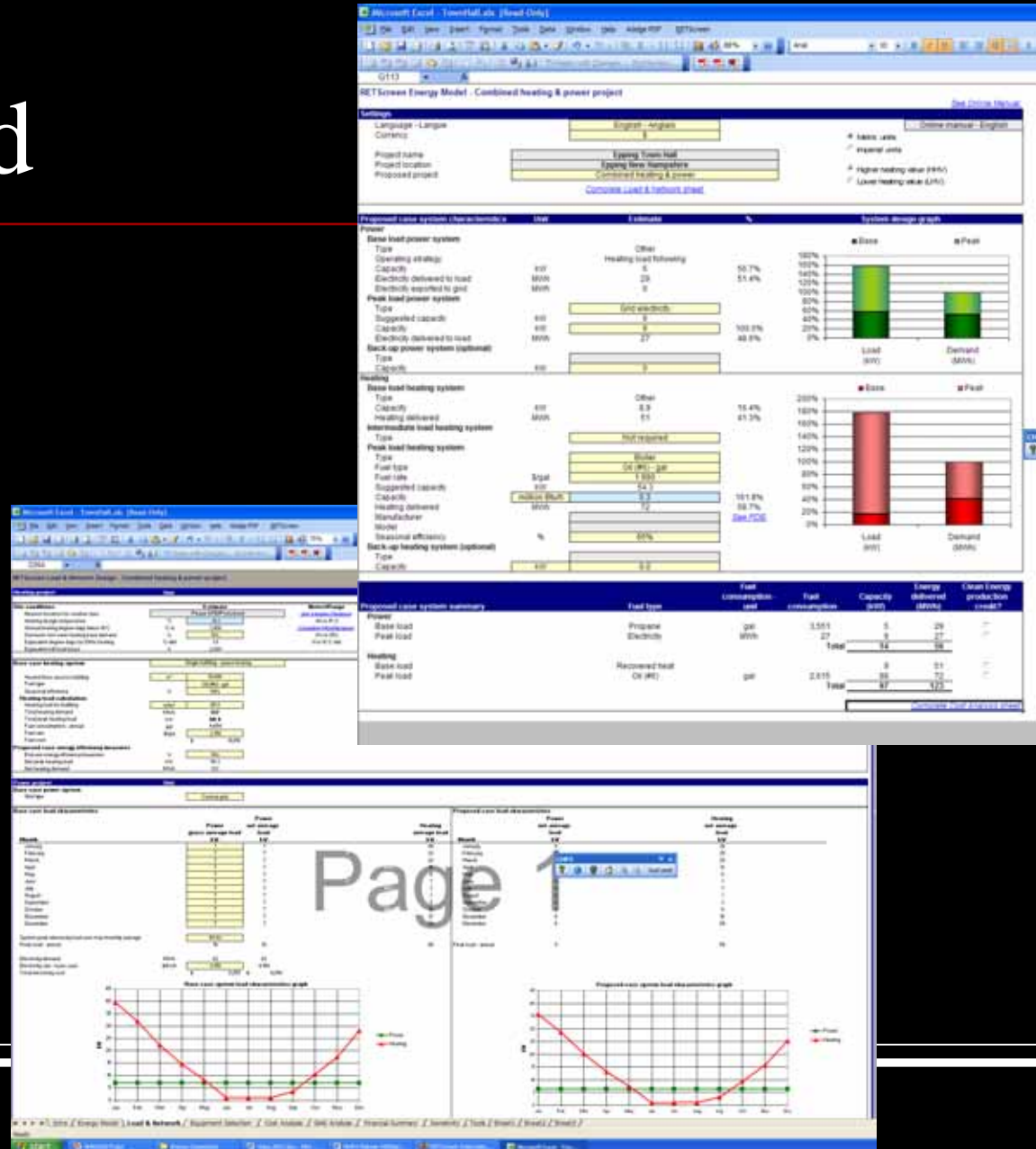


Created: 2004-04-01
Updated: 2007-03-29

[Important Notices](#)

Data to add

- Energy.
- Fuel.
- Proposal.
- Costs.



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RET Screen Cost Analysis - Combined heating & power project

Settings - Epping Town Hall - Epping New Hampshire

Pre-feasibility analysis Cost reference Cost reference:
 Feasibility analysis Second currency

Initial costs (credits)	Unit	Quantity	Unit cost	Amount	Relative costs
Feasibility study					
Feasibility study	cost	1	\$ 2,000	\$ 2,000	
Sub-total:				\$ 2,000	8.4%
Development					
Interconnection	cost	1	\$ 2,000	\$ 2,000	
Sub-total:				\$ 2,000	8.4%
Engineering					
Engineering	cost	1	\$ 2,000	\$ 2,000	
Sub-total:				\$ 2,000	8.4%
Power system					
Base load - Other	kW	5	\$ 2,750	\$ 13,750	
Peak load - Grid electricity	kW	9		\$ -	
Road construction	km			\$ -	
Transmission line	km			\$ -	
Substation	project			\$ -	
Energy efficiency measures	project	1	\$ -	\$ -	
Custom	credit	1	\$ -	\$ -	
Sub-total:				\$ 13,750	58.1%
Heating system					
Base load - Other	kW	0.9	\$ 40	\$ 36	
Peak load - Boiler	kW	0.9		\$ -	
Energy efficiency measures	project	1	\$ -	\$ -	
Custom	cost	1	\$ -	\$ -	
Sub-total:				\$ 36	1.5%
Balance of system & miscellaneous					
Balance of system & miscellaneous	cost	1	\$ 1,000	\$ 1,000	
Contingencies	%	10.0%		\$ 2,111	
Interest during construction	8.00%	6 month(s)		\$ 464	
Sub-total:				\$ 3,675	15.1%
Total initial costs				\$ 23,681	100.0%
Annual costs (credits)					
O&M					
Parts & labour	project	1	\$ 200	\$ 200	
O&M	cost	1	\$ 200	\$ 200	
Contingencies	%	5.0%		\$ 40	
Sub-total:				\$ 470	2.9%
Fuel					
Propane	gal	3,551	\$ 1,350	\$ 4,794	
Oil (#6)	gal	2,615	\$ 1,990	\$ 5,203	
Electricity	MWh	27	\$ 150,000	\$ 4,046	
Sub-total:				\$ 14,043	97.1%
Total annual costs				\$ 14,463	100.0%
Periodic costs (credits)					
Overhaul	cost	10	\$ 2,000	\$ 2,000	
				\$ -	
				\$ -	
End of project life				\$ -	

[Go to GNG Analysis sheet](#)

Cost analysis

Base case system GHG summary (Baseline)

Fuel type	Fuel mix %	CO2 emission	CH4 emission	N2O emission	Fuel	GHG emission	GHG emission
		factor kg/GJ	factor kg/GJ	factor kg/GJ	consumption MWh	factor tCO2/MWh	tCO2
Oil (#6)	76.3%	74.1	0.0029	0.0019	198	0.269	53
Electricity	23.7%	194.7	0.0189	0.0051	62	0.708	44
Total	100.0%	102.7	0.0067	0.0027	260	0.373	97

Proposed case system GHG summary (Combined heating & power project)

Fuel type	Fuel mix %	CO2 emission	CH4 emission	N2O emission	Fuel	GHG emission	GHG emission
		factor kg/GJ	factor kg/GJ	factor kg/GJ	consumption MWh	factor tCO2/MWh	tCO2
Propane	41.8%	57.5	0.0009	0.0009	99	0.208	21
Oil (#6)	46.9%	74.1	0.0029	0.0019	111	0.269	30
Electricity	11.4%	194.7	0.0189	0.0051	27	0.708	19
Total	100.0%	80.9	0.0039	0.0019	238	0.293	70

GHG emission reduction summary

	Base case GHG emission tCO2	Proposed case GHG emission tCO2	Gross annual GHG emission reduction tCO2	GHG credits transaction fee %	Net annual GHG emission reduction tCO2
Combined heating & power project	97	70	27	0%	27

Net annual GHG emission reduction 27.4 tCO2 is equivalent to 5.6 Cars & light trucks not used

[Complete Financial Summary sheet](#)

GHG Emissions

Formal Study



- 38.352 btu's per sq/ft
- New construction with minimal energy efficiency 9-10 btu's per sq ft.



Formal Study Results.



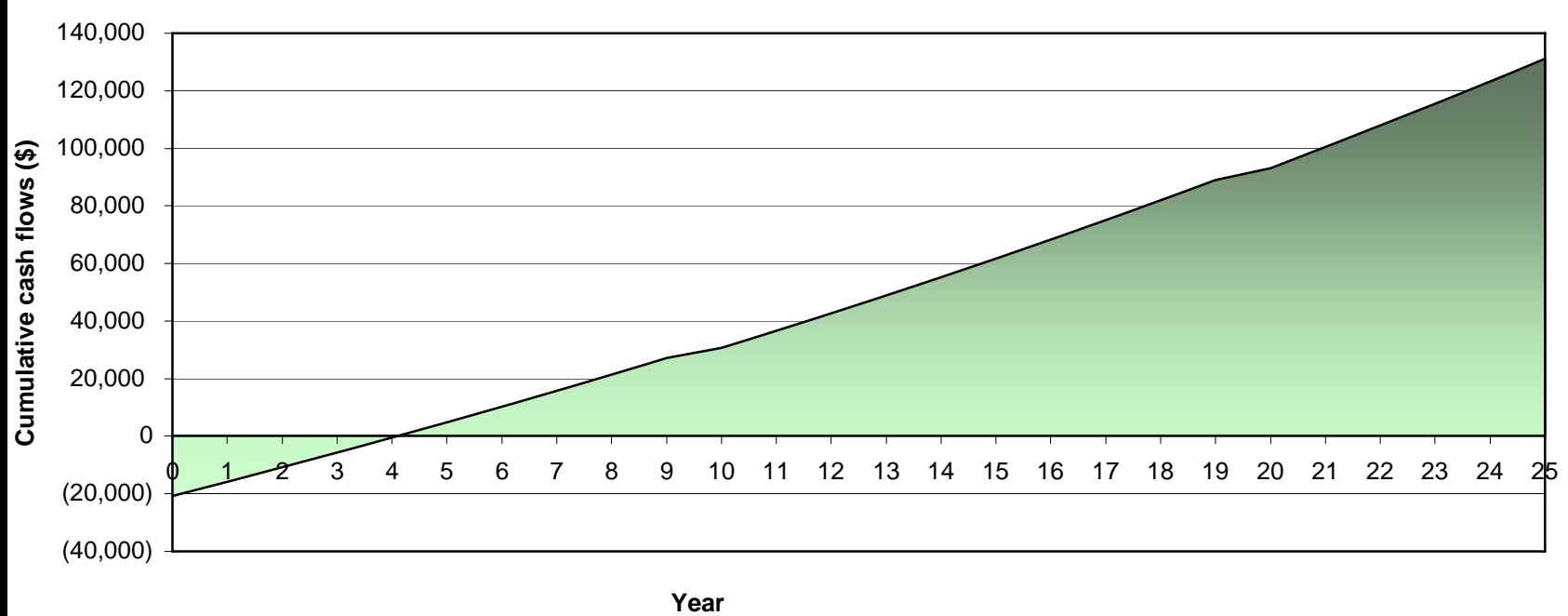
- CHP
- Lighting.
 - Efficient Fixtures.
 - Occupancy Sensors.
- Envelope.
 - Insulation.
 - Windows.
- Other.



Economic Return.



Cumulative cash flows graph



Actual Results. 3.4 years



- Projected.
 - 4.2 years

	<i>Status quo Situation</i>	<i>With CHP & Energy Reduction Measures</i>	<i>Savings</i>
Annual Electric Use (kWH)	30624	27562	3062
Annual Boiler Fuel Use (Gal)	4978	870	4108
Expected Purchases From Utility	\$6,125	\$297	\$5,828
Expected Fuel Oil Purchases	\$12,445	\$2,175	\$10,270
Expected Cost of Propane		\$6,770	-\$6,770
Maintenance Cost		\$400	-\$400
Net Savings			\$8,928
CHP Capital Cost		\$30,000.00	
Other Energy Savings Cost		\$25,000.00	

Town as regulator?



- Master Plan.
 - Lay the foundation.
 - Climate Change.
 - Traditional Powers.
- Regulate.
 - Existing authority.
 - LEED.
 - Epping example.



INTIMIDATION

NO ONE CAN MAKE YOU FEEL INFERIOR WITHOUT YOUR CONSENT,
BUT YOU'D BE A FOOL TO WITHHOLD THAT FROM YOUR SUPERIORS.

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