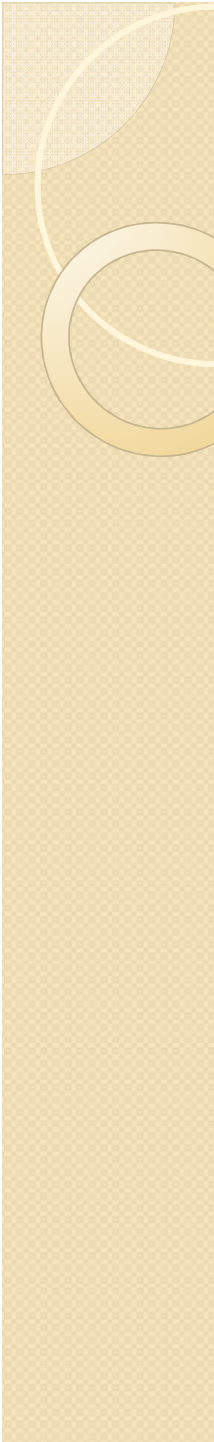


# Town of Ingersoll

## Industrial Park Solar Project 2010

- Town Staff and EARTH Corporation Staff began meeting about the Green Energy and Economy Act in March 2009
- As a result: the Ingersoll Renewable and Alternative Energy Strategy was developed
- This Steering Committee included members from government, education and the private sector
- Steering Committee has met ongoing since 2009
- Measurable results and outcomes from this committee have been significant to moving Ingersoll towards a greener community

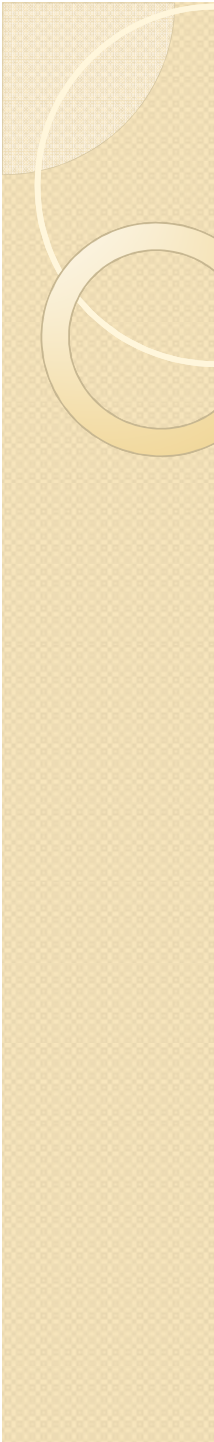


# Town of Ingersoll Industrial Park Solar Project 2010

## **Ingersoll Renewable and Alternative Energy Strategy 2009 - 2014**

### **The Overall Main Goals are:**

- To create renewable and alternative energy opportunities in Ingersoll
- To create jobs for rural and urban areas

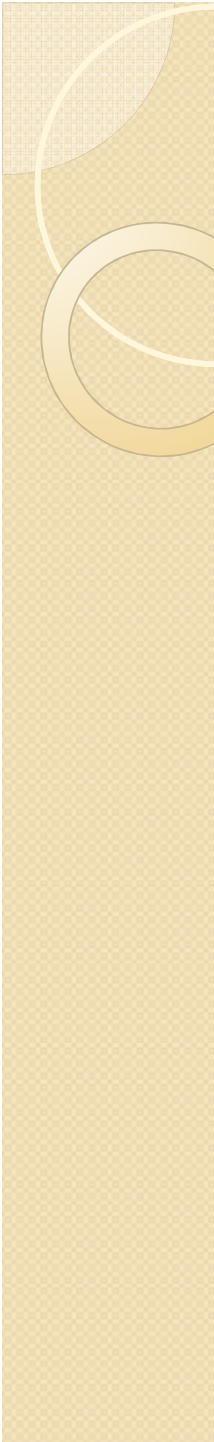


# Town of Ingersoll

## Industrial Park Solar Project 2010

A couple of examples of short term gains are!

- Menova Energy Inc. and ERTH (CRU Solutions) have created a partnership to install tracking solar units in southwestern Ontario. This is creating jobs.
- Conestoga College has opened the **Ingersoll Skills Training Centre**. This is shaping up to be a very busy facility “focused on the place to be in Ontario” for the power sector. This is creating jobs.
- Conestoga College announced last week that they will be running a solar installation course starting January 2011 out of the Ingersoll Skills Training Centre. This is creating jobs.
- Intech GmbH & Co. KG, a German distributor of photovoltaic plants, headquartered in Germany and France, have expanded opening an office in Ingersoll, To be called **Intech Clean Energy Inc.** this office will be central to offer their product and services throughout North America. See <http://intech-solar.com/>. This is creating jobs.
- Several local companies are moving ahead with roof top and ground mounted projects. This is creating jobs.
- Several local existing companies will be involved in the construction of not only the Town owned 10 MW solar project but others as well. This is maintaining and creating jobs.
-



## Town of Ingersoll Industrial Park Solar Project 2010

Next step is to look at other proactive ideas!

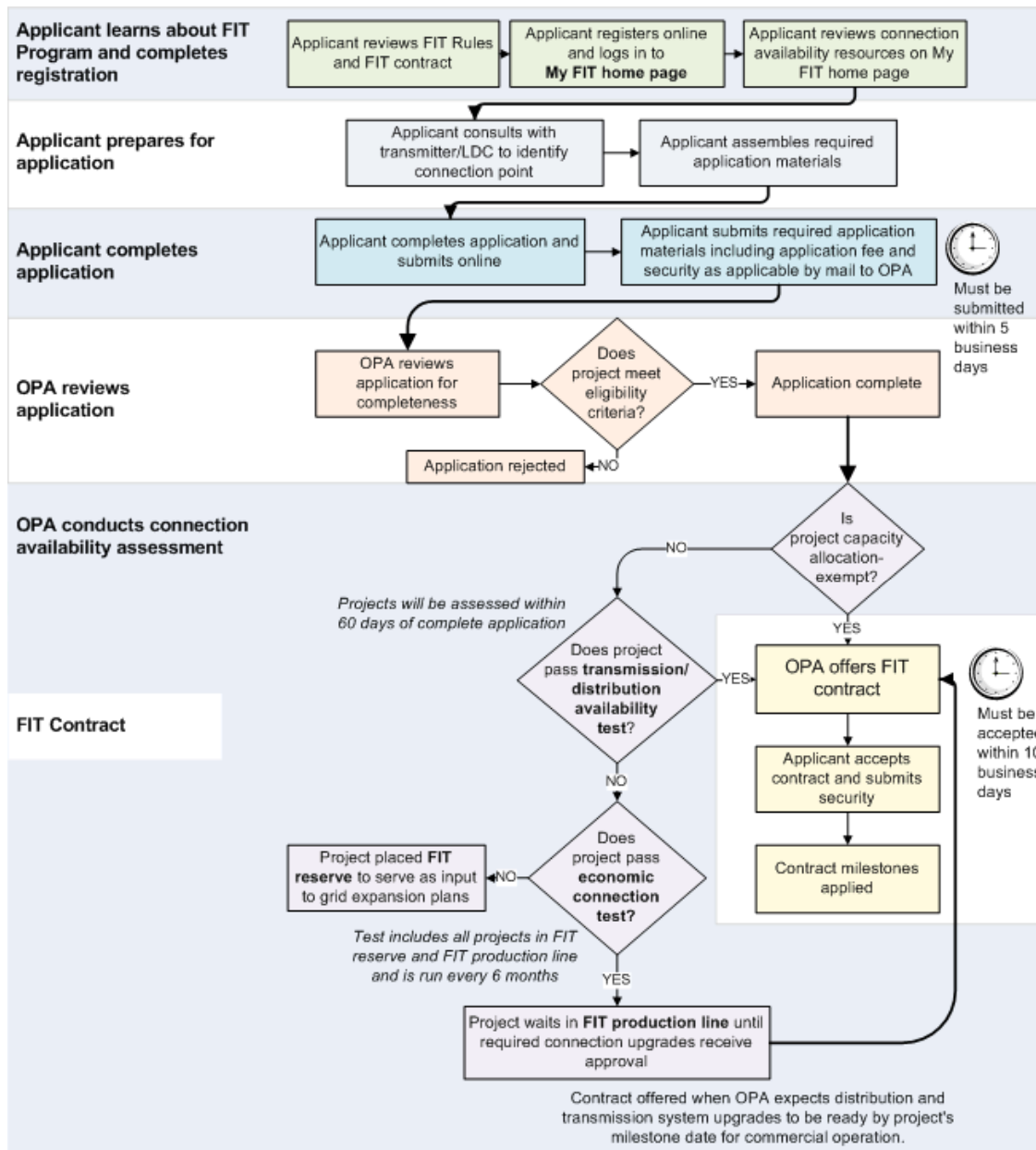
- This includes renewable and alternative energy and conservation for municipal buildings and building a solar project!
- The timing for solar photovoltaic systems for municipalities is available and has become financially viable (Municipal World August 2010)

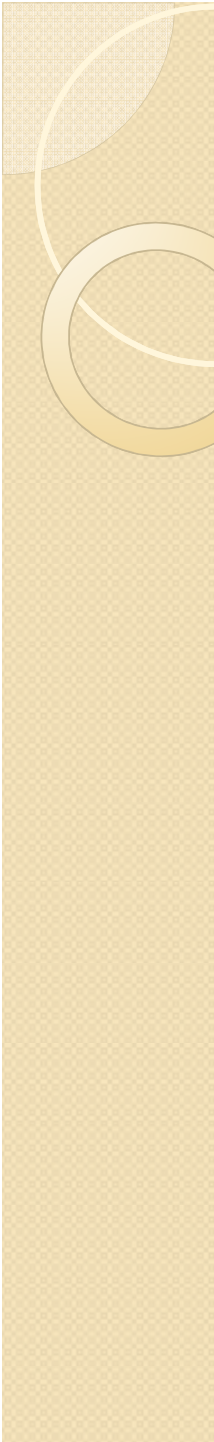


## Town of Ingersoll

### Industrial Park Solar Project 2010

- Guaranteed 20 Year Contract
- Minimize Future Tax Increases
- Maintain Existing Level of Service
- Continue to Repair Aging Infrastructure
- Absorb Funding Cuts to Town Grants From the Province
- Maintain Existing Amenities and Provide New Amenities - Minimal Impact on Taxes





## Town of Ingersoll Industrial Park Solar Project 2010

- Applications submitted by June 4 will proceed through review, connection availability testing and consideration for contract before the ECT is held in August.
- Applications proceed to contract or the ECT as they are deemed to be complete and have completed the Transmission Availability Test and Distribution Availability Test.
- Town is one step from being offer a contract.



## Town of Ingersoll Industrial Park Solar Project 2010

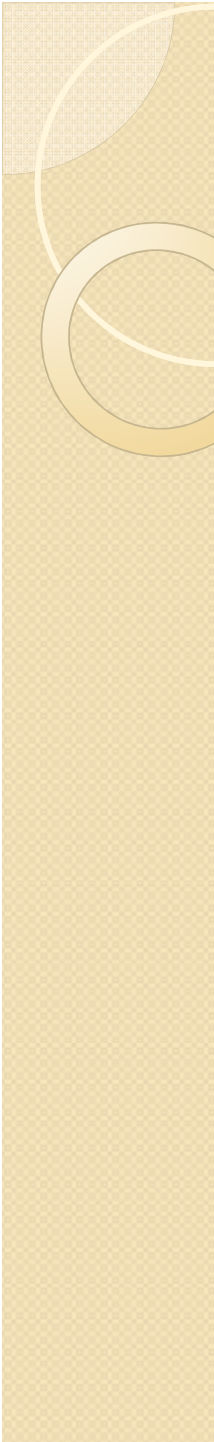
You will have 10 business days from the issuance of the offer notice to accept the FIT contract by signing and returning the signed contract to the OPA. If the OPA does not receive your signed FIT contract within 10 business days of the offer notice, your application will be deemed to be withdrawn. Your application time-stamp will be forfeited and the offer of a FIT contract will be revoked.



## Town of Ingersoll

### Industrial Park Solar Project 2010

- The RETScreen International Clean Energy Decision Support Centre seeks to build the capacity of planners, decision-makers and industry to implement renewable energy, cogeneration and energy efficiency projects. This objective is achieved by: developing decision-making tools (i.e. RETScreen Software) and disseminating knowledge to help people make better decisions



## Town of Ingersoll Industrial Park Solar Project 2010

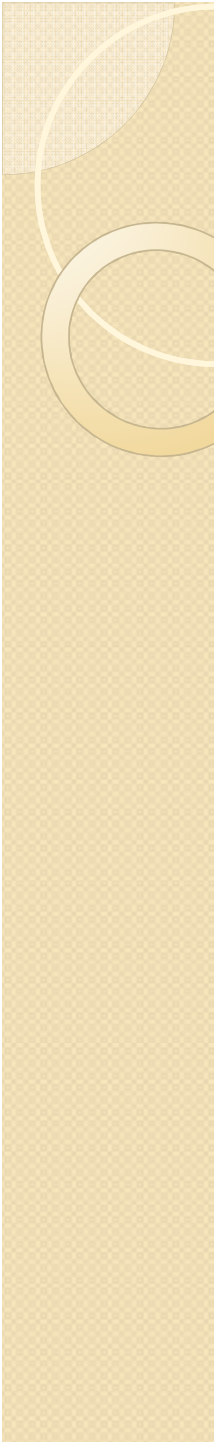
- The **RETScreen Clean Energy Project Analysis Software** is a unique decision support tool developed with the contribution of numerous experts from government, industry, and academia.



## Town of Ingersoll

### Industrial Park Solar Project 2010

- **National Aeronautics & Space Administration's ([NASA](#)) Langley Research Center**
- **Renewable Energy & Energy Efficiency Partnership ([REEEP](#))**
- **United Nations Environment Programme's ([UNEP](#)) Energy Unit of the Division of Technology, Industry and Economics ([DTIE](#))**
- **Global Environment Facility ([GEF](#)) co-financed, [UNEP](#) lead Solar and Wind Energy Resource Assessment ([SWERA](#)) Programme**
- **World Bank's Prototype Carbon Fund ([PCF](#))**
- **The Energy + Environment Foundation ([EEF](#))**
- **[Leonardo](#) ENERGY Initiative**



## Town of Ingersoll Industrial Park Solar Project 2010

- Ontario Power Authority
  - OPA Formula  
\$5,665,792
  - RET Program  
\$5,861,487
  - Intech Clean Energy Inc.  
\$5,649,512



Analysis type

Method 1  
Method 2

**Resource assessment**

Solar tracking mode

Fixed

Slope

\*

35.0

Azimuth

\*

0.0

Show data

Month	Daily solar radiation - horizontal	Daily solar radiation - tilted	Electricity export rate	Electricity exported to grid
	kWh/m <sup>2</sup> /d	kWh/m <sup>2</sup> /d	\$/MWh	MWh
January	1.61	2.75	433.0	800.4
February	2.62	3.95	433.0	1,025.8
March	3.63	4.45	433.0	1,246.3
April	4.69	4.98	433.0	1,313.6
May	5.79	5.59	433.0	1,482.2
June	6.34	5.86	433.0	1,471.8
July	6.12	5.77	433.0	1,480.1
August	5.12	5.22	433.0	1,345.4
September	3.92	4.49	433.0	1,143.9
October	2.71	3.66	433.0	992.3
November	1.55	2.32	433.0	631.2
December	1.27	2.09	433.0	603.8
<b>Annual</b>	<b>3.79</b>	<b>4.26</b>	<b>433.00</b>	<b>13,536.9</b>

Annual solar radiation - horizontal

MWh/m<sup>2</sup> 1.38

Annual solar radiation - tilted

MWh/m<sup>2</sup> 1.56

**Photovoltaic**

Type

poly-Si

Power capacity

9,777.02

Manufacturer

Day4 Energy

Model

poly-Si - Day4 48MC 190 51458 unit(s)

Efficiency

14.7%

Nominal operating cell temperature

45 °C °F 113.0

Temperature coefficient

0.40% / °C

Solar collector area

66,646 m<sup>2</sup> ft<sup>2</sup> 717,375

Miscellaneous losses

3.0%

**Inverter**

Efficiency

96.0%

Capacity

10000.0

Miscellaneous losses

3.0%

**Summary**

Capacity factor

15.8%

Electricity exported to grid

MWh 13,536.9

\$/kWh 0.433

[See product database](#)

RETScreen Financial Analysis - Power project

Financial parameters			
General			
Fuel cost escalation rate	%		
Inflation rate	%		
Discount rate	%		
Project life	yr		20

Finance			
Incentives and grants	\$		
Debt ratio	%		

Income tax analysis			

Annual income			
Electricity export income			
Electricity exported to grid	MWh		13,537
Electricity export rate	\$/MWh		433.00
Electricity export income	\$		5,861,487
Electricity export escalation rate	%		

GHG reduction income			
Net GHG reduction	IC02/yr		2,657
Net GHG reduction - 20 yrs	IC02		53,144

Customer premium income (rebate)			

Clean Energy (CE) production income			

Other income cost			

Project costs and savings/income summary

Initial costs			
Power system	\$		0
Balance of system & misc.	\$		0
<b>Total initial costs</b>	<b>0.0%</b>	<b>\$</b>	<b>0</b>

Annual costs and debt payments			
O&M	\$		0
Fuel cost - proposed case	\$		0
<b>Total annual costs</b>	<b>\$</b>		<b>0</b>

Periodic costs (credits)			

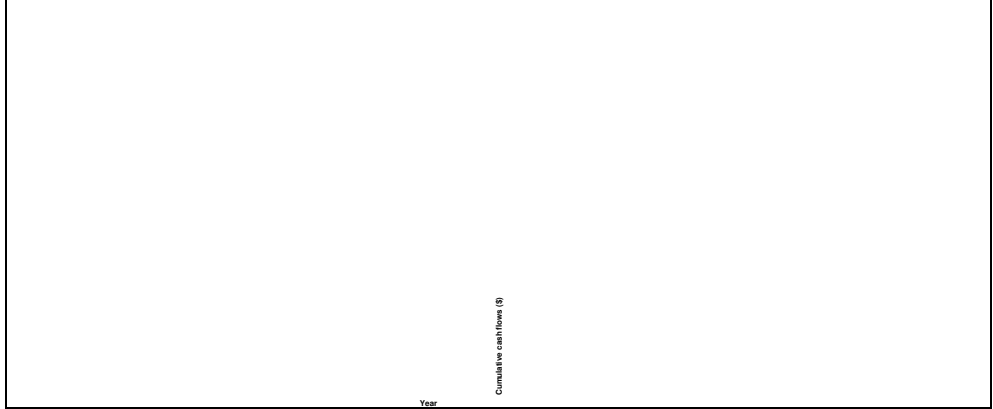
Annual savings and income			
Fuel cost - base case	\$		0
Electricity export income	\$		5,861,487
<b>Total annual savings and income</b>	<b>\$</b>		<b>5,861,487</b>

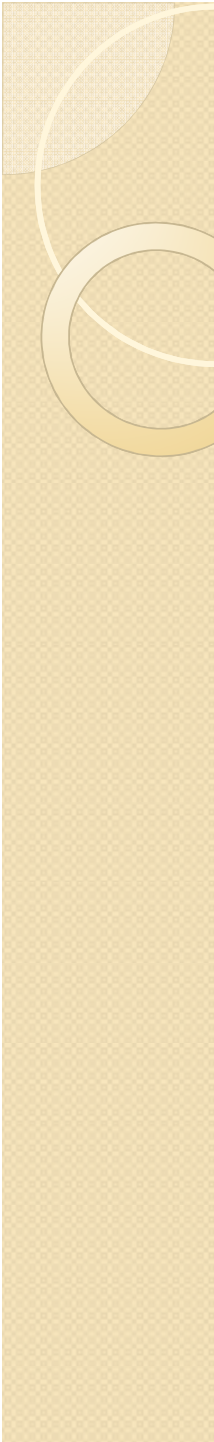
Financial viability			
Pre-tax IRR - equity	%		positive
Pre-tax IRR - assets	%		positive
After-tax IRR - equity	%		positive
After-tax IRR - assets	%		positive
Simple payback	yr		0.0
Equity payback	yr		immediate
Net Present Value (NPV)	\$		117,229,750
Annual life cycle savings	\$/yr		5,861,487
Benefit-Cost (B-C) ratio			#DIV/0!
GHG reduction cost	\$/IC02		(2.26)

Yearly cash flows

Year	Pre-tax	After-tax	Cumulative
#	\$	\$	\$
0	0	0	0
1	5,861,487	5,861,487	5,861,487
2	5,861,487	5,861,487	11,722,975
3	5,861,487	5,861,487	17,584,462
4	5,861,487	5,861,487	23,445,950
5	5,861,487	5,861,487	29,307,437
6	5,861,487	5,861,487	35,168,925
7	5,861,487	5,861,487	41,030,412
8	5,861,487	5,861,487	46,891,900
9	5,861,487	5,861,487	52,753,387
10	5,861,487	5,861,487	58,614,875
11	5,861,487	5,861,487	64,476,362
12	5,861,487	5,861,487	70,337,850
13	5,861,487	5,861,487	76,199,337
14	5,861,487	5,861,487	82,060,825
15	5,861,487	5,861,487	87,922,312
16	5,861,487	5,861,487	93,783,800
17	5,861,487	5,861,487	99,645,287
18	5,861,487	5,861,487	105,506,775
19	5,861,487	5,861,487	111,368,262
20	5,861,487	5,861,487	117,229,750

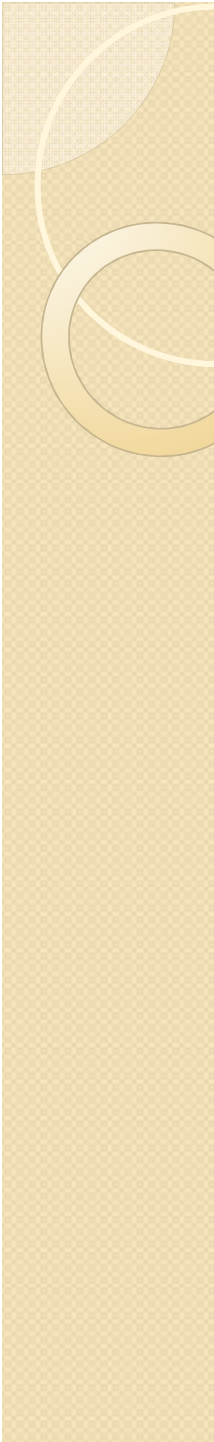
Cumulative cash flows graph





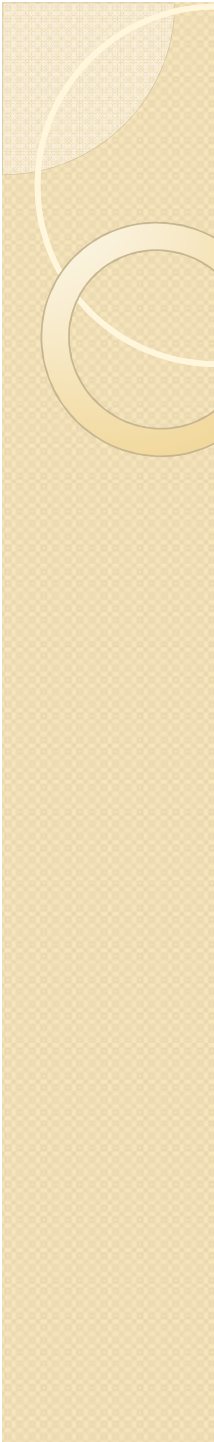
## Town of Ingersoll Industrial Park Solar Project 2010

- Ten Year Net Revenue \$1,256,792
- Fifteen Year Net Revenue \$2,359,992



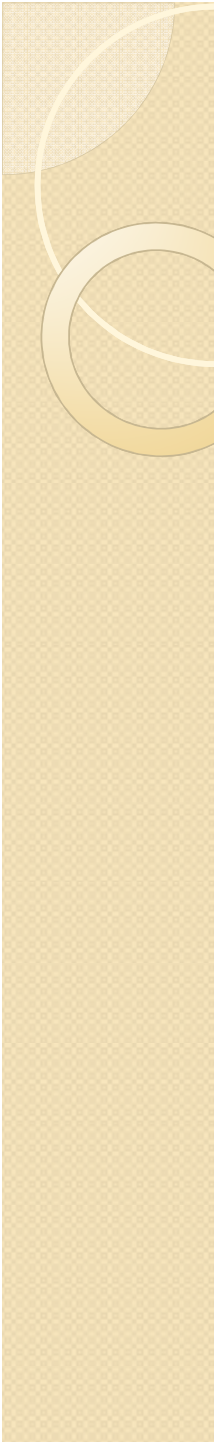
## Town of Ingersoll Industrial Park Solar Project 2010

- CAMI Taxes \$950,000
- IMT Taxes \$78,000



## Town of Ingersoll Industrial Park Solar Project 2010

- 2009 Study Navigant Consulting Inc. for the OPA 28 jobs per MW created
- 14 direct and 14 indirect per MW
- The jobs created tend to be local
- EARTH Corporation (CRU Solutions) opportunity to subcontract electrical and installation



## Town of Ingersoll Industrial Park Solar Project 2010

- In conclusion:

From the September/October 2010

Municipal Monitor

“Ingersoll, Waterloo, Windsor, Sault Ste. Marie and Kingston are attracting developers to their door to help make them leaders in green energy, and some big commercial players are ready to go, whereas some of the municipalities are not” says (Kris) Stevens (ED – OSEA). “Every councillor and every bureaucrat should be looking at this and saying ‘Man, how can we make this work?’”