



**Prepared for: Sector Growth & Sector Development Office
Economic Development & Culture
City of Toronto**

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Introduction

Under the Green Energy Act of 2009, Ontario's Feed-in-Tariff or FIT Program is North America's first comprehensive guaranteed pricing structure for renewable electricity production.

As of January 2011, the FIT program requires that 60% of "content" (materials and labour) for a solar project be manufactured in Ontario. As a result, manufacturers of major components of PV systems are setting up in Ontario to meet this need.

The Directory of Solar PV Manufacturers in Toronto

The attached Directory of Solar PV Manufacturers captures the key players in the Solar PV supply chain by component, namely, modules, inverters, racking, wiring and electrical. It provides an initial overview of the companies in the solar PV supply chain in the City of Toronto in December 2010.

Module manufacturers have made decisions to set up in various parts of Ontario due to proximity to the US corridor, distance to the airport, or proximity to other suppliers in the supply chain. Many manufacturers have set up in south western Ontario due to easy access to the US market. There are 4 module manufacturers in Windsor alone.

Another strategy by some large global module manufacturers is to set up a sales office in Toronto with easy access to a large customer base in the commercial sector but with plant locations in smaller towns in Ontario.

While approximately 8 module manufacturers have a presence in Toronto (either a sales office and/or a manufacturing facility), there is currently only one key manufacturer in the City, namely, Celestica. Celestica operates as a toll manufacturer and the module partner brand had not been announced at the time of writing this report.

A number of module manufacturers have identified low iron tempered glass as a shortcoming in the supply chain, both locally and globally. While glass is not explicitly listed under the Ontario content requirements, it is a key input in manufacturing a cost effective module in Ontario.

While there are 6 inverter companies located in Toronto (sales and/or manufacturing), there are only two manufacturers in the City – Celestica and SAE Power, both contract manufacturers. Sub-contacting appears to be a growing trend in Toronto and the industry in general.

Many racking manufacturers have re-tooled their core operation to supply the solar PV industry. There are a few racking companies based in Toronto but the majority are located in more industrialized zones in the Toronto vicinity, directly north of the City.

There are many wiring and electrical companies located in more industrialized areas in the Toronto vicinity but there appears to be a shortage of companies based within the City borders. Only a couple of companies were identified as having the potential to supply the solar industry.

Recommendations / Next Steps

The City of Toronto should consider exploring taking a deeper dive into the supply chain to capture the manufacturers of sub-components feeding into the major component manufacturers. For example, companies that manufacture sub-components such as silicon, glass, aluminum, charge controllers, batteries, transformers, combiner boxes, etc.

Directory of Solar PV Manufacturers In Toronto - December 2010

Company	Ontario Office	Ontario Mfg	Global HQ	Website	Contact	Products	Production Capacity (MW)	Potential Expansion (MW)
Inverters								
Advanced Energy	n/a	Toronto, ON	Fort Collins, CO	www.advanced-energy.com	Marty Fleet, Regional Sales Manager, Phone: +1.541-312-3832, Mobile: +1.905-929-1519, Email: martyfleet@pvpowered.com	"Solaron"™ and "PV Powered"™ branded inverters	n/a	n/a
Celestica	844 Don Mills Rd, Toronto, ON, M3C 1V7	Toronto, ON	Toronto, ON	www.celestica.com	Craig Hamilton, Business Development, Phone: 416-448-5374, Cell: 647-274-9883, Email: chamילו@celestica.com; Alexei Miecznikowski, Phone: 416-448-5686, Email: amieczni@celestica.com	Produce branded inverters for Advanced Energy and Solarbridge	n/a	n/a
Power One	n/a	Scarborough, ON	Camarillo, CA	www.power-one.com	Kevin Trosian, Vice President, Finance & Investor Relations, Phone: 1-805-987-8741, Email: Kevin.Trosian@power-one.com; Andrew Beekman, Regional Sales Manager (North America) Phone: 201-875-7958, Email: Andrew.Beekman@power-one.com	"Aurora"™ branded string, central and station inverters	500	tbd
SAE Power	1810 Birchmount Rd., Scarborough, ON M1P 2H7	Scarborough, ON	Los Gatos, CA	www.saepower.com	Colm Campbell, President, Phone: 416-298-0560	"Aurora"™ branded string, central and station inverters	500	tbd
Santerno (Carraro Group)	80 Richmond Street West, Victory Building, Suite 1502, Toronto, ON M5H 2A4	Plant location will be announced in January 2011	Imola, Italy	www.santerno.com	Roberto Giberti, North America Sales Manager, Phone: 416-789-0793 Mobile +1 415-269-9373, Email: Roberto.Giberti@santerno.com	"Sunway" branded string, parallel, station inverters	100	n/a
Schneider Electric (Xantrex)	19 Waterman Avenue, Toronto M4B 1Y2	Mississauga, ON	France	www.schneider-electric.ca	Gary Abrams, President, Phone: 416-752-8020	"Schneider Electric Xantrex" branded inverters	n/a	n/a
Solarbridge Technologies	n/a	Toronto, ON	Austin, TX	http://solarbridgetech.com	Ron Van Dell, President & CEO, Phone: 512-637-6860; Joseph Scarci, VP, Sales & Marketing, Toll Free 877-848-0708, Phone 512-637-6860	"Solarbridge Pantheon"™ branded microinverter	n/a	n/a
Sustainable Energy Technologies	24 Duncan St., 2nd Fl., Toronto, ON, M5V 2B8	Cambridge, ON	Calgary, AB	www.sustainableenergy.com	Brent Somerville, VP Sales, Phone: (416) 697-8200 Email: brent.somerville@sustainableenergy.com	"SUNERGY"™ branded PV parallel inverters	350	n/a

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Modules								
Canasia Solar Corp.	73 Simcoe Street, Suite 306, Toronto, ON M5J 1W9	London, ON	Toronto, ON	http://canasiasolar.com	Jenny Hui, VP Corporate Development, Phone: 416-363-1815, Email: jhui@canasiapower.com	Not available as of Dec. 17	50	200
Celestica	844 Don Mills Rd, Toronto, ON, M3C 1V7	Toronto, ON	Toronto, ON	www.celestica.com	Craig Hamilton, Business Development, Phone: 416-448-5374, Cell: 647-274-9883, Email: chamilto@celestica.com ; Alexei Miecznikowski, Phone: 416-448-5686, Email: amieczni@celestica.com	Module partner has not been announced (as of Jan 7th)	100	200
Eclipsall Energy Corp.	17-510 Coronation Drive, Toronto, ON M1E 4X6	Looking for facility in Toronto or Scarborough	Toronto, ON	www.eclipsall.com	Les Lyster, President, Phone: 416-845-0667; Email: les@eclipsall.com	Not available as of Dec. 17	64	128
Morgan Solar Inc.	30 Ordnhance St., Toronto, ON M6K 1A2	Toronto, ON	Toronto, ON	www.morgansolar.com	Nicolas Morgan, Vice-President, Phone: 416-203-1655, Email: Nicolas@morgansolar.com ; Emma Hemmingsen Phone: 416-203-1655, Email: Emma.Hemmingsen@morgansolar.com	Sun Simba™ HCPV (high concentration photovoltaic)	5	n/a
Opel Solar International Inc.	121 Richmond St. West, Suite 501, Toronto ON M5H 2K1	Unknown	Shelton, CT	www.opelinc.com	Patricia Agudow, Vice President, Public Relations, Phone: 1-203-612-2366 ext 2612; Email: p.agudow@opelinc.com ; Toronto office: Michel Lafrance Phone: 416-368-9411, Email: lafrance@wcexploration.com	OPEL Mk-Id HCPV (High concentration photovoltaic) solar panels	n/a	n/a
Opsun Panels Inc	215 Spadina Avenue, Suite 400, Toronto, ON M5T 2C7	Markham, ON	Quebec City, QC	http://www.opsunpanels.com	Raymond Gilbert, Chairman of Board, Phone 418-800-3569, Email: rgilbert@opsun.com ; Erik Desrosiers, Director of Business Development; Phone: 416-800-1614; Mobile 647-883-0060, Email: edesrosiers@opsun.com	Monocrystalline PV module, 60 cells, 245-255W; Monocrystalline PV module, 72 cells, 295-302W	50	n/a
Siliken	1 Yonge Street, Suite 1801, Toronto, ON M5E 1W7	Windsor, ON	Valencia, Spain	www.siliken.com	Paco Caudet, General Manager Canada, Phone: +34-637-102-342 or 416-214-3655, Email: paco.caudet@siliken.com ; Carlos Arguedas, Sales Manager, Phone: 416-214-3655, Email: carlos.arguedas@siliken.com	Polycrystalline and monocrystalline photovoltaic (PV) modules. Polycrystalline PV module, 60 cells, 215-240W; Monocrystalline PV module, 60 cells, 225-240W; Polycrystalline PV module, 50 cells, 175-200W; Monocrystalline PV module, 60 cells, 230-245W	50	n/a
SunEdison	595 Adelaide St. East, Suite 400, Toronto ON M5A 1N8	NewMarket, ON	Beltsville MD	www.sunedison.ca	Jason Gray, Vice-President and Country Manager, Phone: 1-877-322-1710; Email: jgray@sunedison.com	MEMC branded solar panels; specs not available	50	200

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Racking								
Advanced Solar Investments Ltd. (ASI)	133 Dolomite Drive, Toronto, ON M3J 2N1	Cobourg	Toronto, ON	www.advancedsolarinvestments.com	Robert Koblinsky, CEO, Phone: 416-739-8300; Email: robert.koblinsky@advancedsolarinvestments.com; Richard Morris, COO, Email: richard.morris@advancedsolarinvestments.com	"SunMount"™ Racking system	n/a	n/a
Opsun Panels Inc	215 Spadina Avenue, Suite 400, Toronto, ON M5T 2C7	Markham, ON	Quebec City, QC	http://www.opsunpanels.com	Raymond Gilbert, Chairman of Board, Phone 418-800-3569, Email: rgilbert@opsun.com; Erik Desrosiers, Director of Business Development; Phone: 416-800-1614; Mobile 647-883-0060, Email: edesrosiers@opsun.com	"SunRail"™ flat roof mounting system; "FlushMount" (TM) residential mounting system	n/a	n/a
Samco Solar	315 Nantucket Blvd., Toronto, ON M1P 2P2	Toronto, ON	Toronto, ON	www.samco-solar.com	David Pichard, VP Solar Business Development, Phone: 416-285-0619; Email: dpichard@samco-machinery.com	Ground & roof mount system racking, framing and sub-assemblies, ground posts, custom metal forming solutions.	n/a	n/a
Sasco Strut	777 Fenmar Drive, North York, ON M9L 1C8	North York, ON	North York, ON	www.sascocan.com	Frank Entwisle, General Manager, Phone: (416) 742-6140 Ext. 305 Email: frank@sascocan.com	Complete range of strut channels and fittings; Also roll forming designed to specifications	n/a	n/a
Wiring & Electrical								
InvoTronics	365 Passmore Avenue, Scarborough, ON M1V 4B3	Scarborough, ON	Scarborough, ON	www.invoTronics.com	Earl Hughson, Phone: 416-321-8822; sales@invotronics.com	Complete electronic and electro-mechanical systems assembly	n/a	n/a
Protectolite Inc.	84 Railside Rd., Toronto M3A 1A3	Toronto, ON	Toronto, ON	http://www.protectolite.com	Karl Szasz, President, Phone: 416-444-4484; Email: kszasz@protectolite.com	Custom	n/a	n/a

List of Solar PV Manufacturers in Toronto Vicinity - December 2010*

Company	Ontario Mfg	Production Capacity (MW)	Potential Production (MW)
Inverters			
SMA Solar Technology	Announced in ON	500	
Eaton	Burlington		
Satcon Technology Corporation	Burlington		
Siemens	Burlington		
Melitron Corporation	Guelph		
Sparq	Kingston		
KACO New Energy Inc.	London	330	
AEG Power Solutions	Markham		
Apollo Solar	Mississauga		
Fronius Canada	Mississauga	100	
Schuco	Mississauga		
TechPower Developments	Mississauga		
Flextronics / Enphase Energy	NewMarket		
Hybridyne Power Electronics	NewMarket		
Sunrise Power Corp.	Peterborough		
Sungrow Canada Inc.	Richmond Hill		
Laboratory Testing			
Exova	Mississauga		
Modules			
SonnenPal Energy Inc.	Markham		
Mitsubishi Electric	Markham		
EcoSunPV Inc.	Mississauga		
Schuco	Mississauga	30	
Silfab	Mississauga	60	180
Solar Semiconductor	Mississauga	150	
Lumin Solar	Thornhill		
Sharp	Vaughan (6N Silicon)		
Suntech	Vaughan (6N Silicon)		
UE Solar	Vaughan (6N Silicon)	2	
Sovello	Not known	40	
Sanyo	Woodbridge		
Solgate	Woodbridge	6	25
Monitoring Software			
Cachelon	Markham		
Carlo Gavazzi Canada	Mississauga		
IE Power	Mississauga		
TechPower	Mississauga		
Javelin Technologies	Oakville		
Racking			
Supply Rite Steel	Markham		
SunLink	Markham		
Sapa Extrusions	Mississauga		
Eurospec Manufacturing	Newmarket		
Signature Aluminum Canada Inc	Pickering		
Novatec Machining Inc	Vaughan		
Fabricating Machining Group	Whitby		
Extrudex Aluminum	Woodbridge		
Solar Power Products Inc.	Woodbridge		
Silicon, Ingots & Wafers, Cells			
6N Silicon (Calisolar)	Vaughan		

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Wiring & Electrical			
Acew Electric Corp.	Markham		
Lapp Canada Inc.	Mississauga		
LaPrairie Inc.	Newmarket		
Wieland Electric Inc.	Oakville		
Miratec Inc	Pickering		

*This List is not a comprehensive list of solar PV manufacturers in the Toronto Vicinity; it was intended to capture, at a high level, some of the key players in the solar supply chain located near the City of Toronto borders.