

OPERATION SOLARIZATION™



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SOLUTIONS FOR A SUSTAINABLE PLANET

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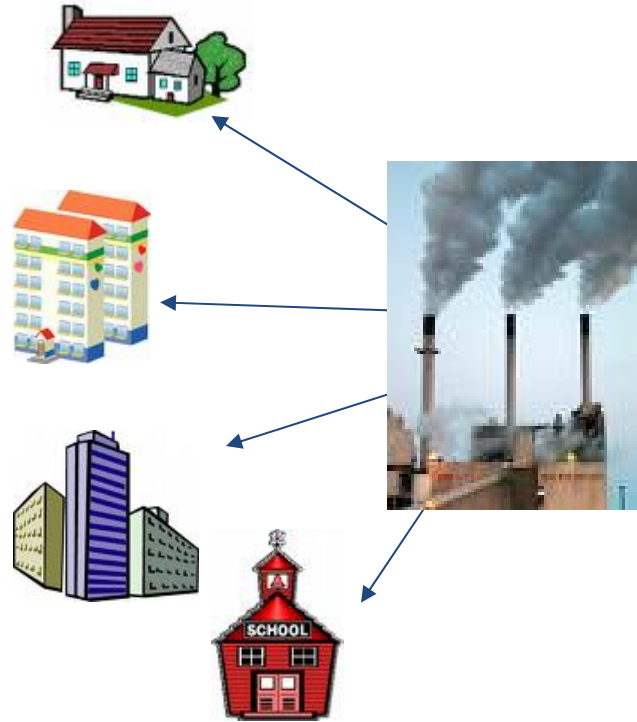


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ENERGY GENERATION

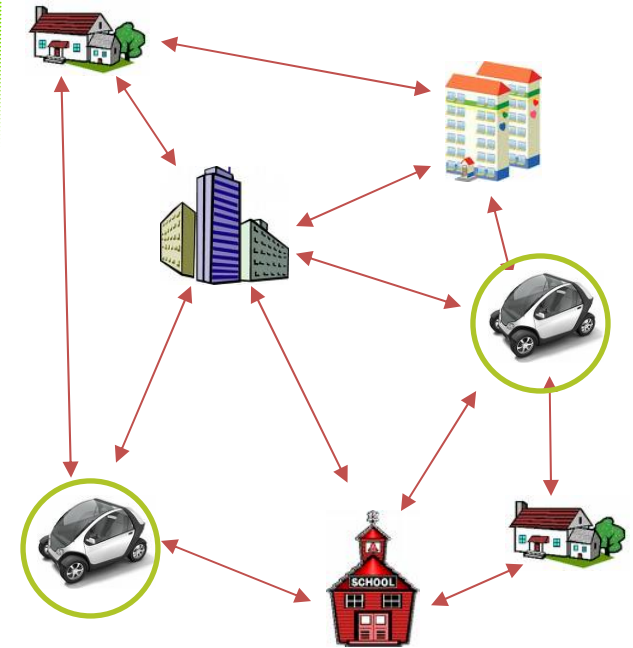
Today



Central Generation

Capital intensive, long lead time, risky, large power losses, often environmentally unfriendly

Tomorrow



Sustainable, distributed energy supply

Incremental, less risky, sustainable, scalable, fast deployment, negligible losses, can be very environmentally friendly

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PRECIOUS STONE - SILICON

The fundamental element that is used in the creation of today's most widely used solar cells is Silicon – the second most abundant element on Earth.

Cells are manufactured into weatherproof Modules that have operational lifetimes in excess of 30 years.



SOLAR MODULE

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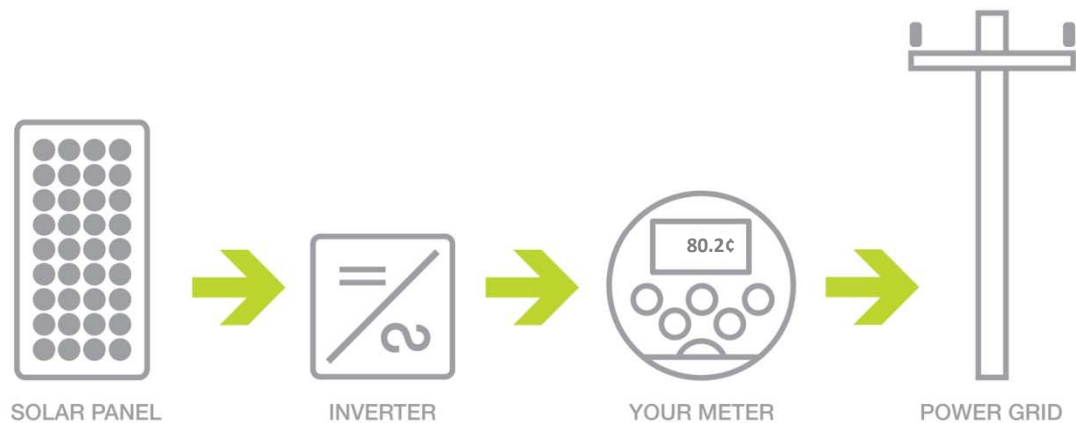
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SOLERA GRID-TIED SYSTEM



- The power you generate will be sold into the electrical grid through a dedicated export meter (Ontario FIT program)

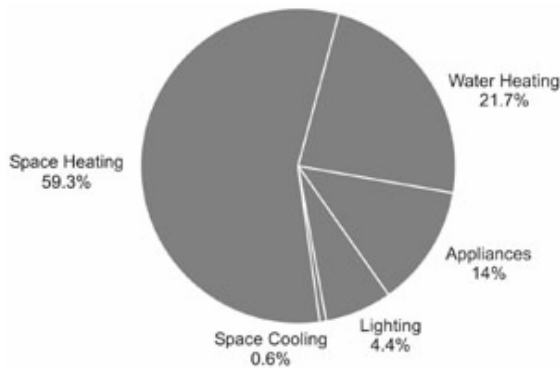




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SOLAR PV – WHERE SHOULD IT GO? ON THE ROOF!



Breakdown of Residential End Use Energy
[Source: Office of Energy Efficiency, Natural Resources Canada.]

- Buildings should be Power Plants.
- Buildings consume 30-40% of all energy produced, and are the major contributor to human-induced global warming
- PHEV/EV's will plug into buildings
- Strong correlation between building energy demand and PV generation profiles.
- PV is easily scalable and quickest DG resource to deploy
- Commercial building rooftops in Ontario can host Gigawatts of solar generation





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SOLAR PV – GOOD PROGRESS

- Technology format has matured and is more standardized; Canadian approvals on equipment is now the norm.
- Familiar electrical methods – installation and servicing possible within skill set of existing tradespeople
- Various interconnection methods becoming understood and normalised
- New products and methods of application make more buildings applicable to hosting solar PV
- Attractive financing options now available – positive cash flow from solar installation (in Ontario)

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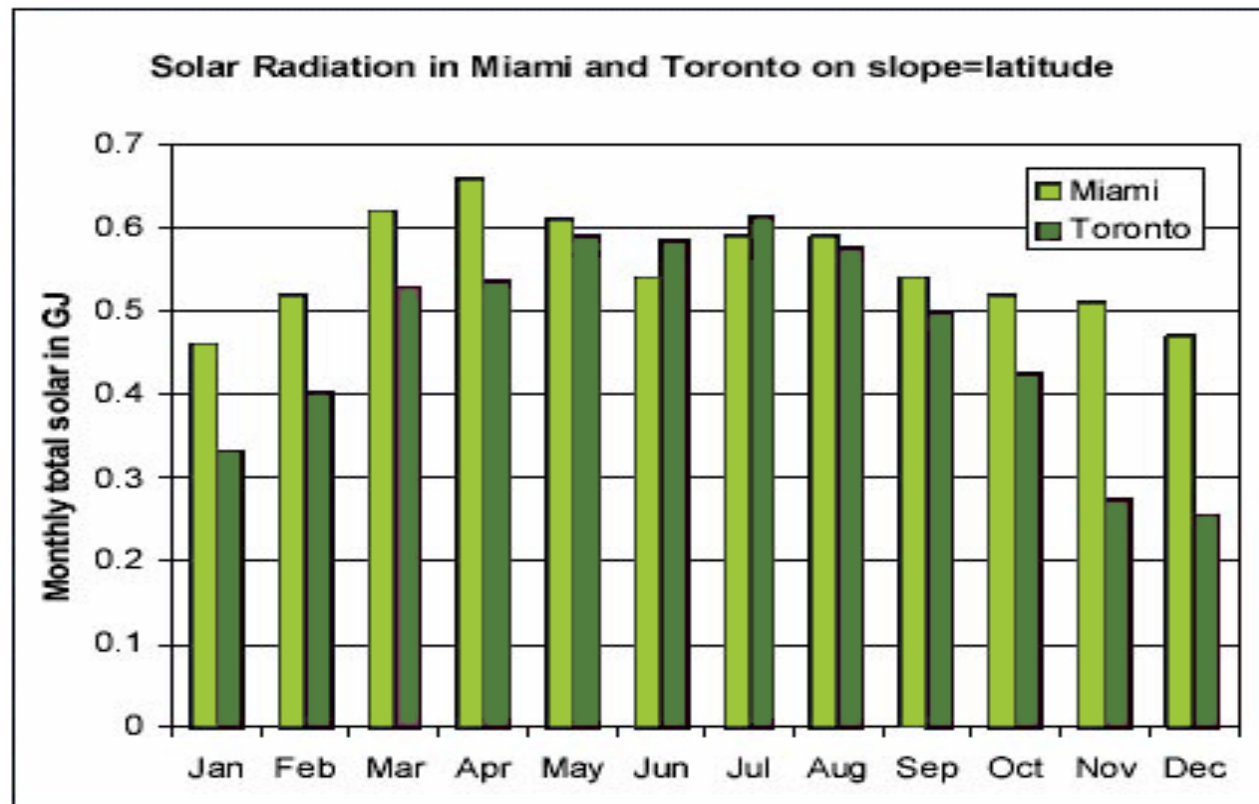




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WE HAVE THE RESOURCE



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RESIDENTIAL SYSTEM

Shown is a typical
residential installation

Rooftop array; inverter
installed in basement

metering configuration
where the new solar
export meter is installed



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COMMERCIAL FLAT ROOF BALLASTED SYSTEM





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COMMERCIAL FLAT ROOF NON-BALLASTED AND NON-PENETRATING SYSTEM



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EMMISSIONS OFFSETS

Each installed kW of solar PV will offset:

- **17 Tonnes of coal from being burned**
- **30 Tonnes of CO² from being emitted into the air**
- **250 Pounds of Nitrogen Oxide from being emitted into the air**
- **288 Pounds of Sulphur Dioxide from being emitted into the air**
- **91 Pounds of Particulate from being emitted into the air**

** Calculated over a 35 year lifespan of solar array.*

Actual lifespan may be longer.



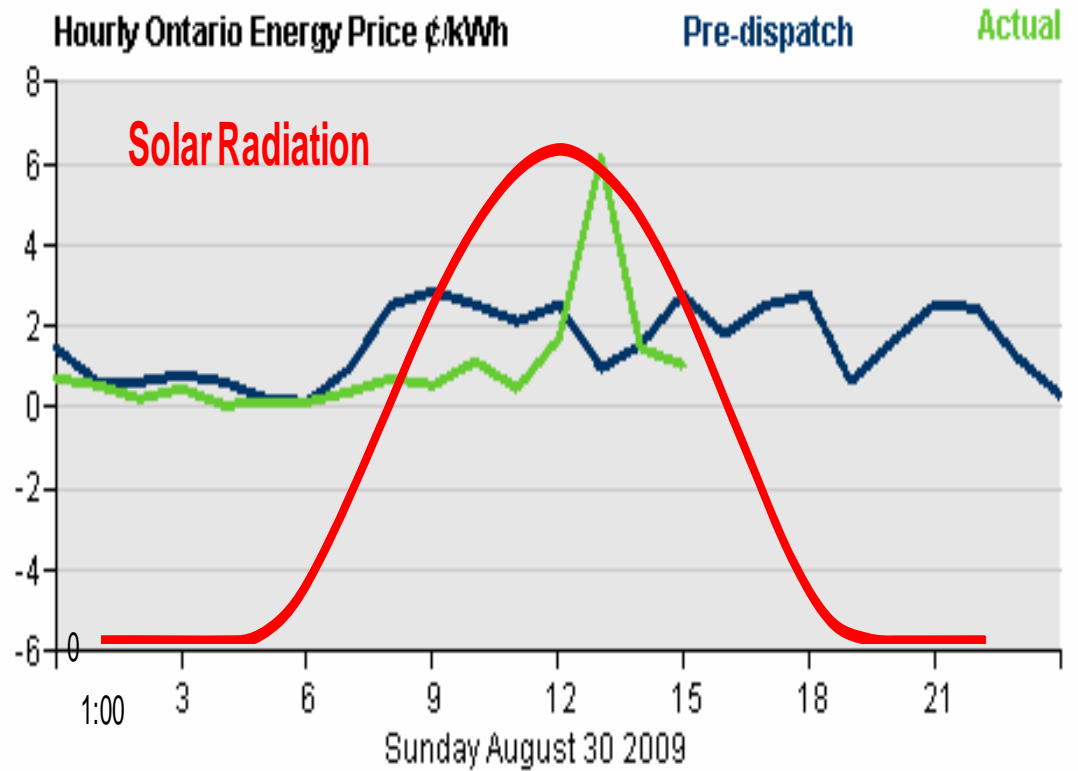
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DAILY POWER DEMAND AND SOLAR ENERGY





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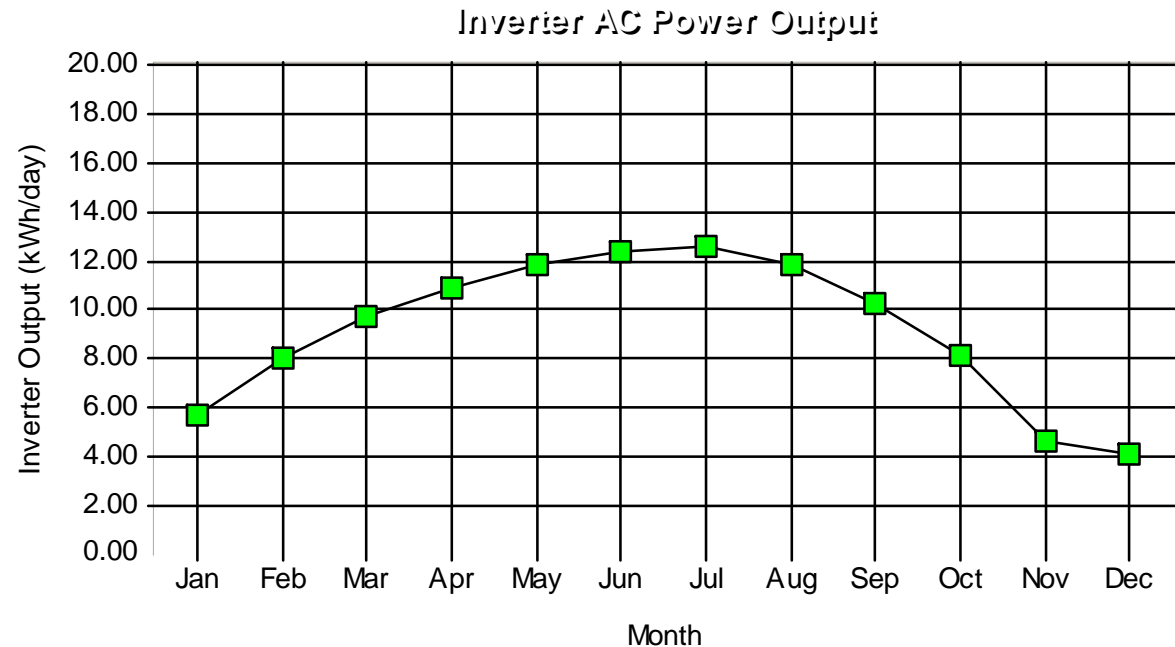
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GENERATION PROFILE - 2.6 KW PV SYSTEM

About 3000 kWh
annual electrical
yield from 2.6kW
system.

Will fully power a
small EV for
24,000 km
annually

Sustainability =
Produce what you
consume



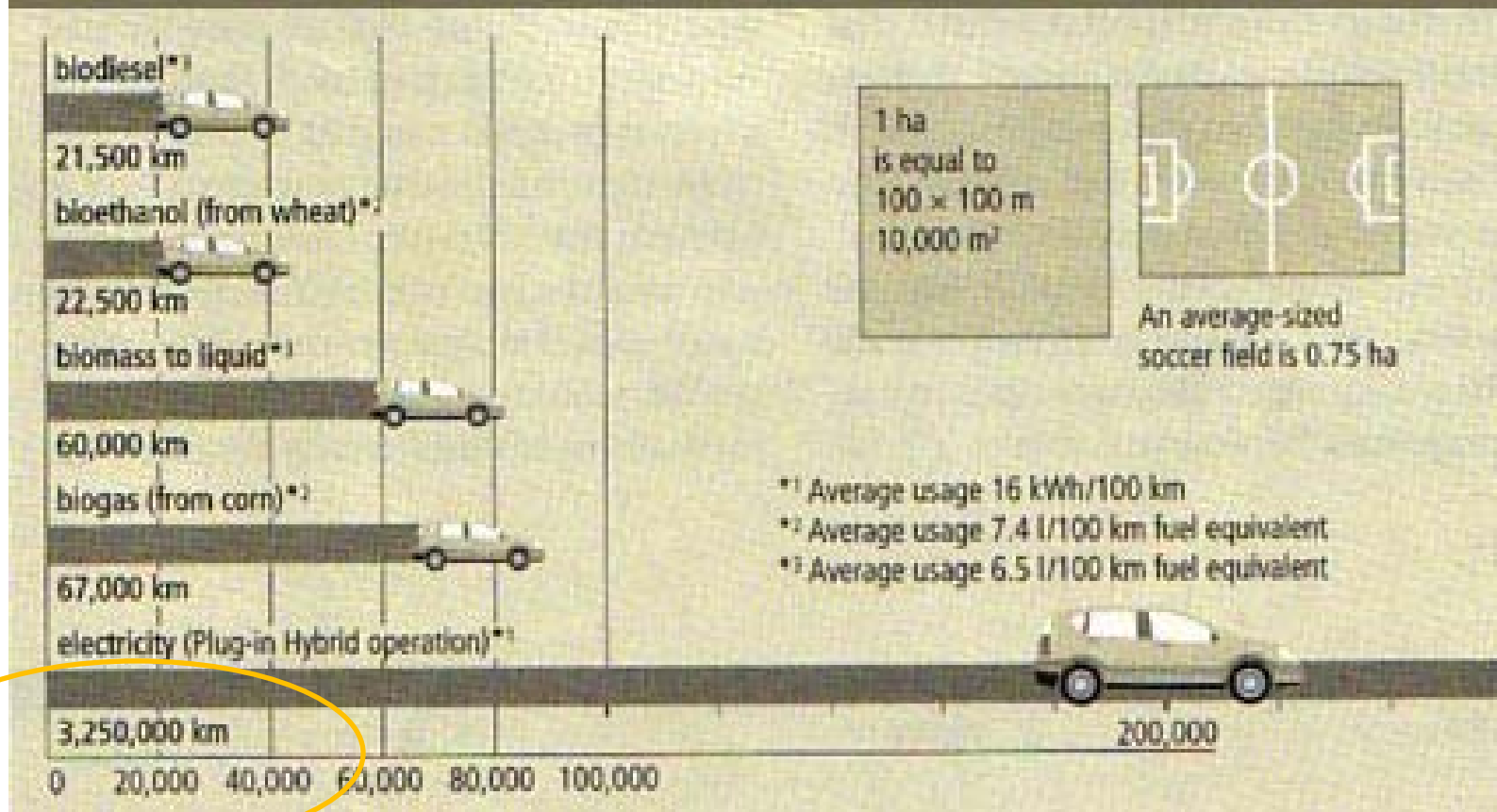
 Inverter AC Output



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Distance reached with 1 ha of energy crop / PV ground-mounted system



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SOLAR PHEV – VERIDIAN PRIUS

Solar roof can generate up to 1.8kWh/day and provide up to 14km additional daily electric travel range



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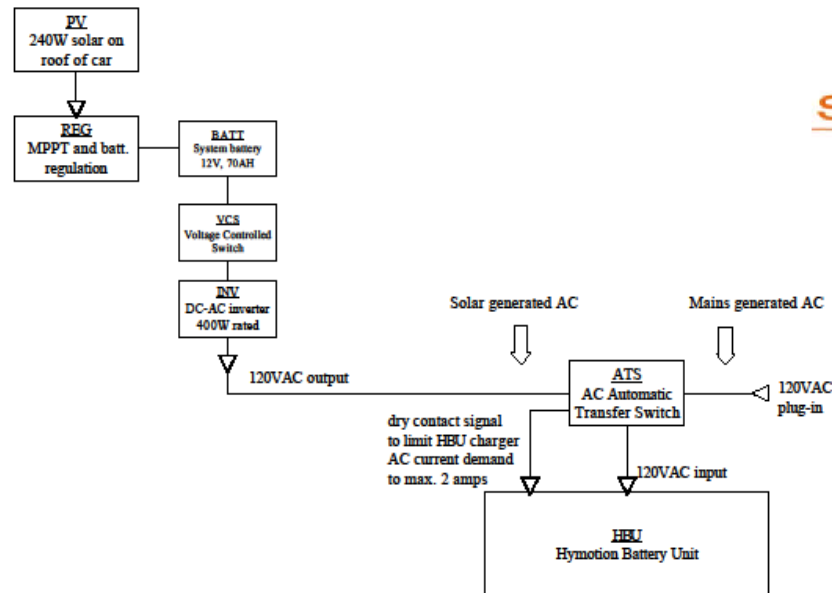


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SOLAR INTEGRATION INTO PRIUS ELECTRICAL SYSTEM

Veridian - Prius with Hymotion battery pack and on-board solar charging system



Theory of Operation:

Solar modules supply current-boosted and regulated power to system battery at all times of sufficient solar insolation.
 VCS controls on/off state of INV based on BATT voltage (roughly the state-of-charge) and day/night; INV will not be powered when solar array is dark.
 ATS will prioritize AC power from INV so that when car is not plugged into AC mains, solar generated AC will power the HBU charger. Plugging into AC mains will automatically disable solar generated AC connection and enable mains generated AC connection.
 When car is not plugged in, HBU charge rate control will be signaled to reduce AC requirement to max 2 amps to roughly match max. solar generating capacity and avoid overloading of INV.





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VERIDIAN BUILDING 8KW PV ROOF

Roof solar array
generates
annual energy
to meet full
requirement of
4-5 plug-in
hybrid vehicles



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SOLAR MONITORING SYSTEM

Typical web-enabled public solar display showing financial, energy and environmental performance of project



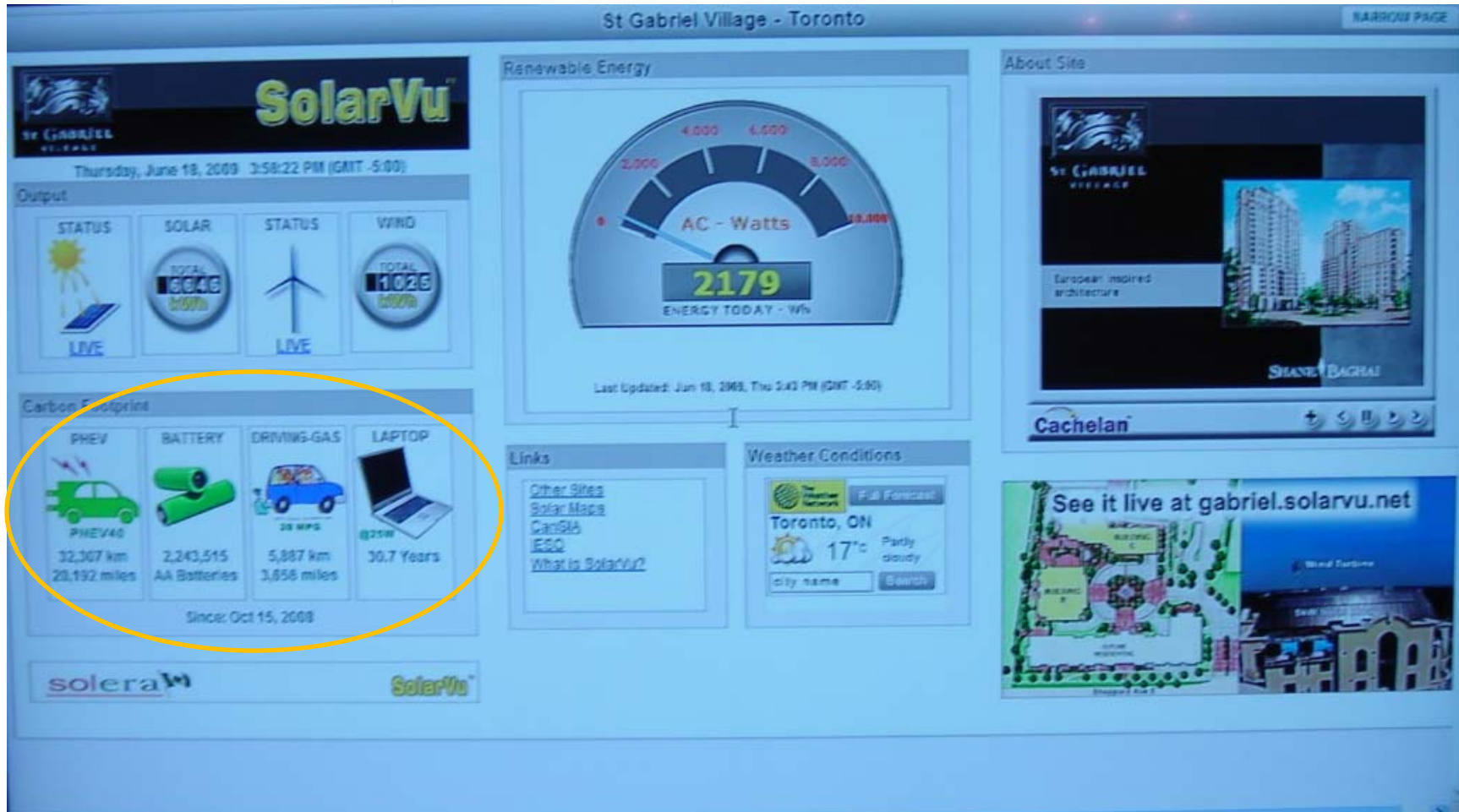
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FORD ESCAPE HYBRID – SOLAR ROOF



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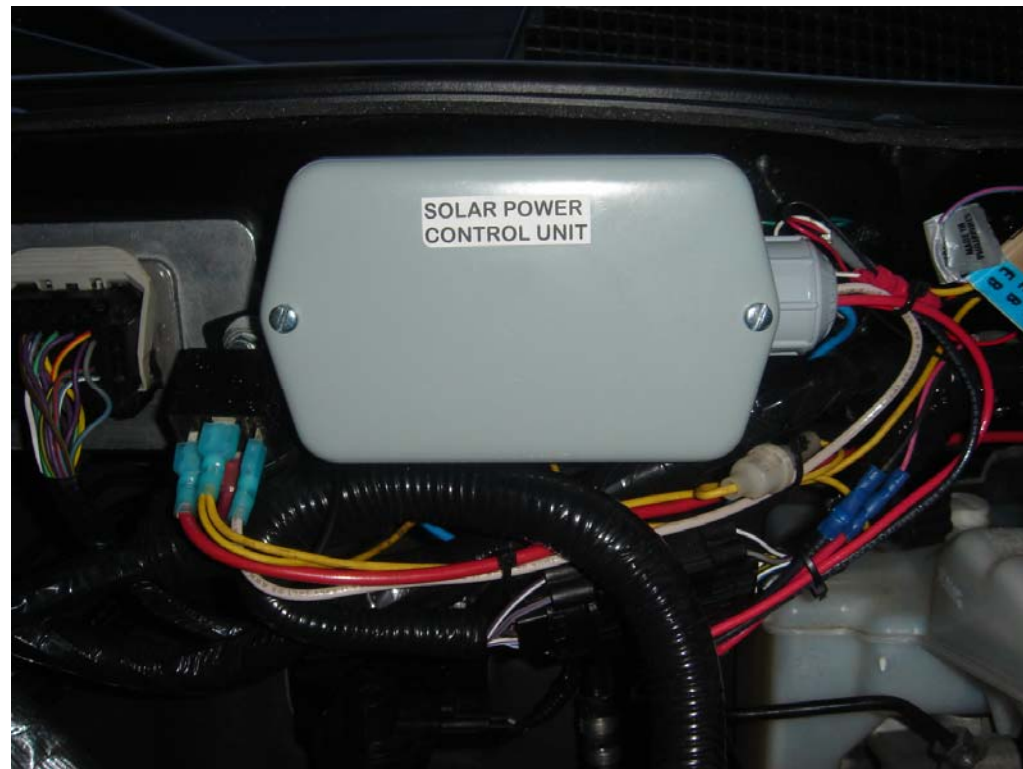
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TORONTO ELECTRIC SOLAR PROJECT

Sufficient energy will be generated to support a fleet of 35 small passenger EV's, each travelling 20,000km/year – and for the next 25 years



Project rated at 90kW, and will generate more than 100,000 kWh annually.



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SOLAR ELECTRIC (PV) POWER REVENUE STREAMS

RENEWABLE ENERGY FEED-IN TARIFF PROGRAM

- **Feed-in Tariff will generate approximately \$ 930 per installed kW, first year output.**
- **Over the 20 years of the contract this will amount to \$16,939 per installed kW. This takes into account a 1% reduction in output efficiency per year.**
- **A sample 2.4 kW array would earn \$ 2232.68 first year revenue, and have a 20 year revenue stream of \$40,653.60**



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