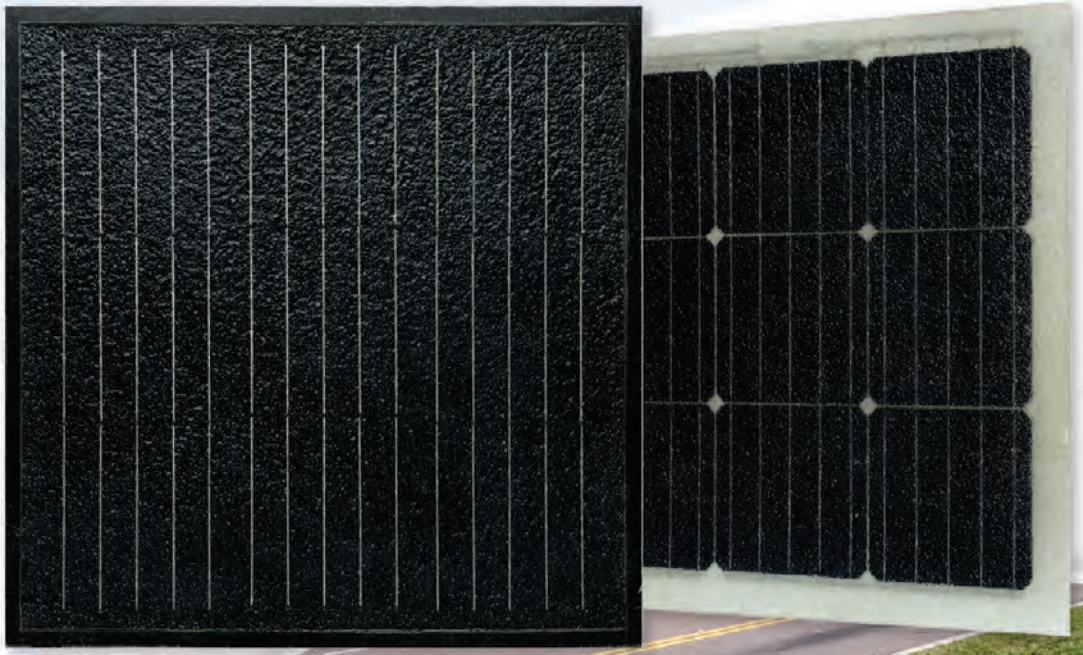
SOLAR EARTH

World's toughest solar



Clean Energy Innovation for Today's Infrastructure

SolarEarth.ca

Solar Intersection Project – City of Tampa Bay, 2019

SOLAR EARTH
World's toughest solar

OUR TECHNOLOGY

Human beings have spent a long time paving over the Earth. Solar Earth now transforms those surfaces into the toughest, most versatile sources of solar energy yet made.

At Solar Earth, we are developing, manufacturing & implementing state-of-the-art solar power solutions that allow driveways, sidewalks, parking lots, bike paths, plazas (and more) to produce cheap clean energy.
Our flagship product is a hardened solar panel that can withstand pedestrian, bicycle or moderate-velocity vehicular traffic. The panels are impervious to extreme weather, and highly resistant to both vandalism and theft.
Sun-exposed infrastructure is adapted to generate renewable electricity while retaining its original purpose.

Technical Data

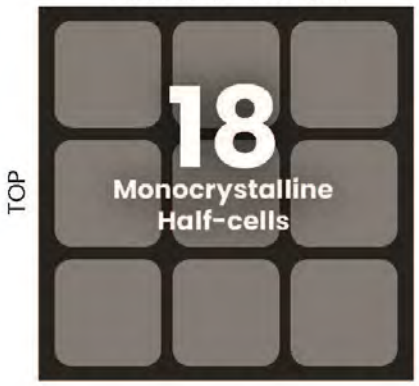
ENVIROMENTAL	
Rated Water Submersion	30 days
Max Oil Submersion	12 hr
Friction Index (f-60): Wet/Dry	0.8/1.02
Expected Lifetime	10 years
Fire/PV safety	Tested UL61703 IE61215

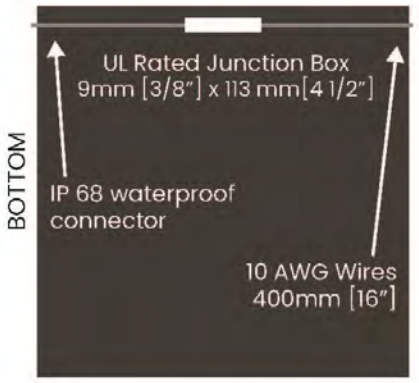
PHYSICAL	
Max Static Load	5,000 kg [11,000lbs]
Max Point Pressure	1.3 MPa [190psi]
Max Speed	40 kmph [25mph]
Max Deflection	5 mm [.2"]
Ambient Range	-20°C [-4F] to 50°C [122F]
Temperature Range	-20°C [-4F] to 90°C [194F]
Weight	2.6 kg [5.7lbs]

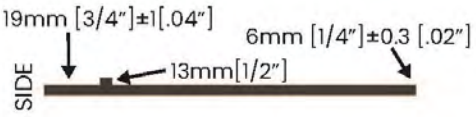
ELECTRICAL	
Power Per Area	127 W/sqm [12W/sqft]
Peak Power	~ 42 W
Power Tolerance	±3%
Temperature Coefficient	-0.38% / -0.21% F
Open Circuit Voltage	12.16 V
Short Circuit Current	4.22 A
Maximum Power Point	10.26 V
Voltage Maximum Power	4.01 A
Point Current Maximum System	1000V
Voltage Overload Protection	15 A
Current Bypass Diodes	1

CE PSE RoHS COMPLIANT

570[22.5"] ±2mm [.1"]







- Complementary to existing land use.
- Makes infrastructure revenue generating and smart.
- Resilient against traffic, weather, theft, and vandalism.
- Low profile and light weight, allowing for wide variety of applications.

Clean Energy Innovation for Today's Infrastructure

Solar Compass TRU, Kamloops BC, 2017

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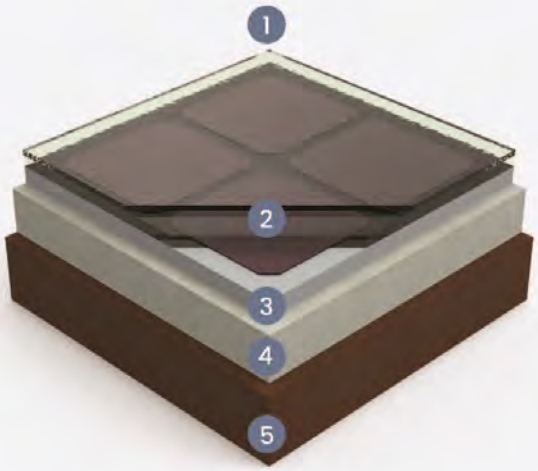
Construction Solutions

Enjoy Limitless and Free Clean Energy

Condition	Direct Mounting		Moulded Base	
	Adhesive	Clamps	Paver	Polymer
Compacted Gravel/Earth			✓	✓
Pavement/Asphalt & Solid Surfaces	✓	✓	✓	✓
Decking, Roofs & Uneven Surfaces			✓	✓
Low Profile	✓	✓	*	*
Heavy Loads	Static	Low-speed	Moderate speed	Low-speed

* For sites with appropriate pavement trenching

- Panels can be glued or clamped to concrete or asphalt substrates.
- Panels can be installed on top of existing infrastructure without modifications.
- Panel system can be integrated with electric vehicle charging technologies.
- Panels can complement and expand traditional PV roof top systems.
- Panels can be used for walkways or patios to turn infrastructure into value-producing assets.



1. Traction Top plane
2. PV Cells
3. Back plane
4. Substrate/Paver
5. Sub-grade (e.g., compacted dirt)

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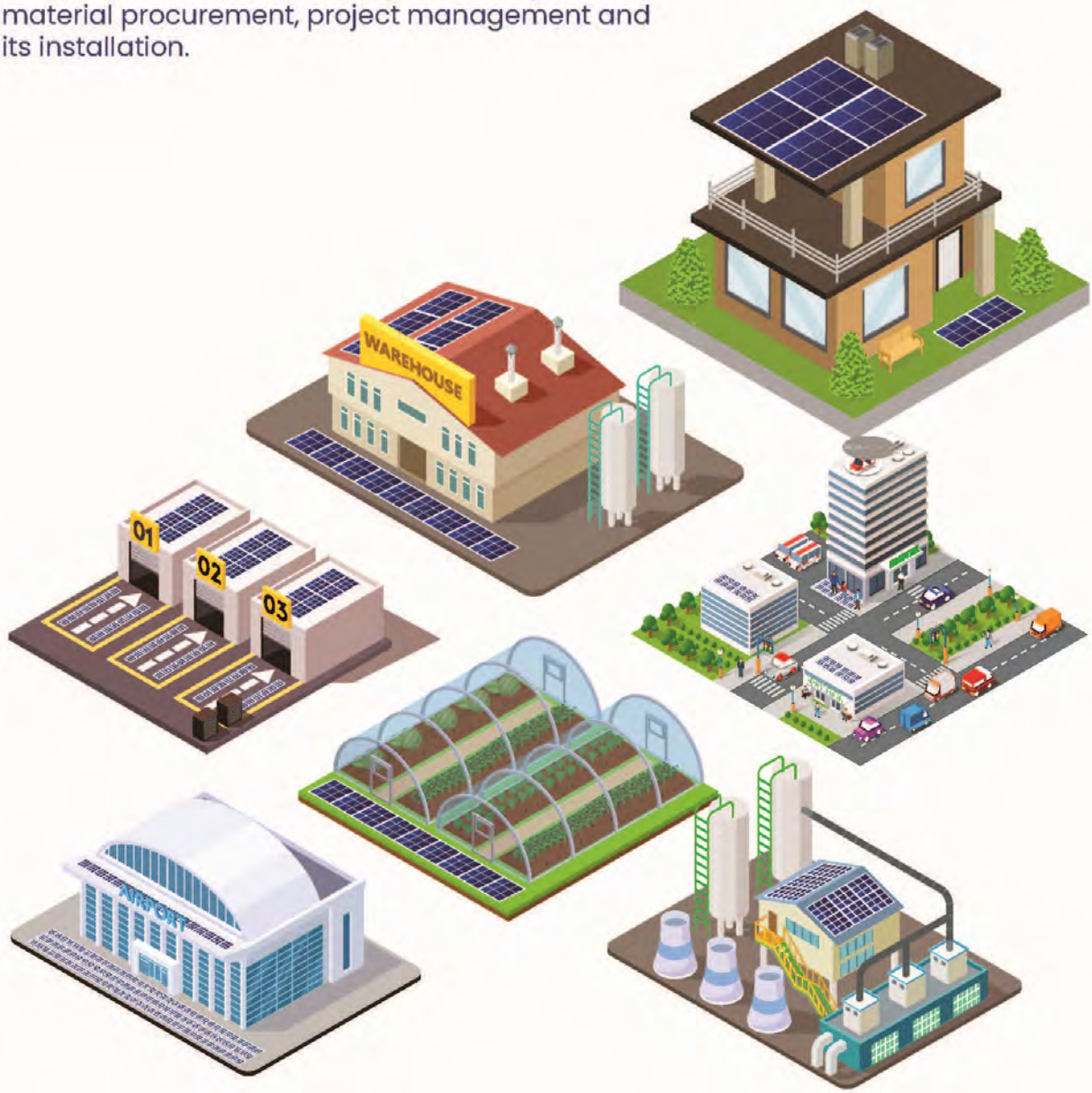
Turn-key Solutions

Solar Earth's experts have been implementing pavement-integrated PV power generation solutions since 2015. Our experienced staff can advise you on Solar Earth turn-key solutions for infrastructure. This includes system design, material procurement, project management and its installation.



Green Village Phase 1 - Daxing, China 2018

Recent Solar Earth Projects

Solar Intersection Project
Tampa, USA

Solar Pavement
Stellenbosch University,
South Africa

Green Village Phase 1
Daxing, China

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SolarEarth embeds solar cells, those oh-so-delicate eggshells so easy to break, into a rock-hard surface. It allows us to "solarize" sidewalks, roads, parking lots, rooftops, docks and more by putting solar cells inside that infrastructure.

It's a breakthrough that captures the power of the sun to "solarize" infrastructure, to help us fight climate change and get us to a Net Zero future.

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SOLAR EARTH TECHNICAL DATA SHEET

- Pavement Integrated PV
- Technical Data
- Construction Solutions

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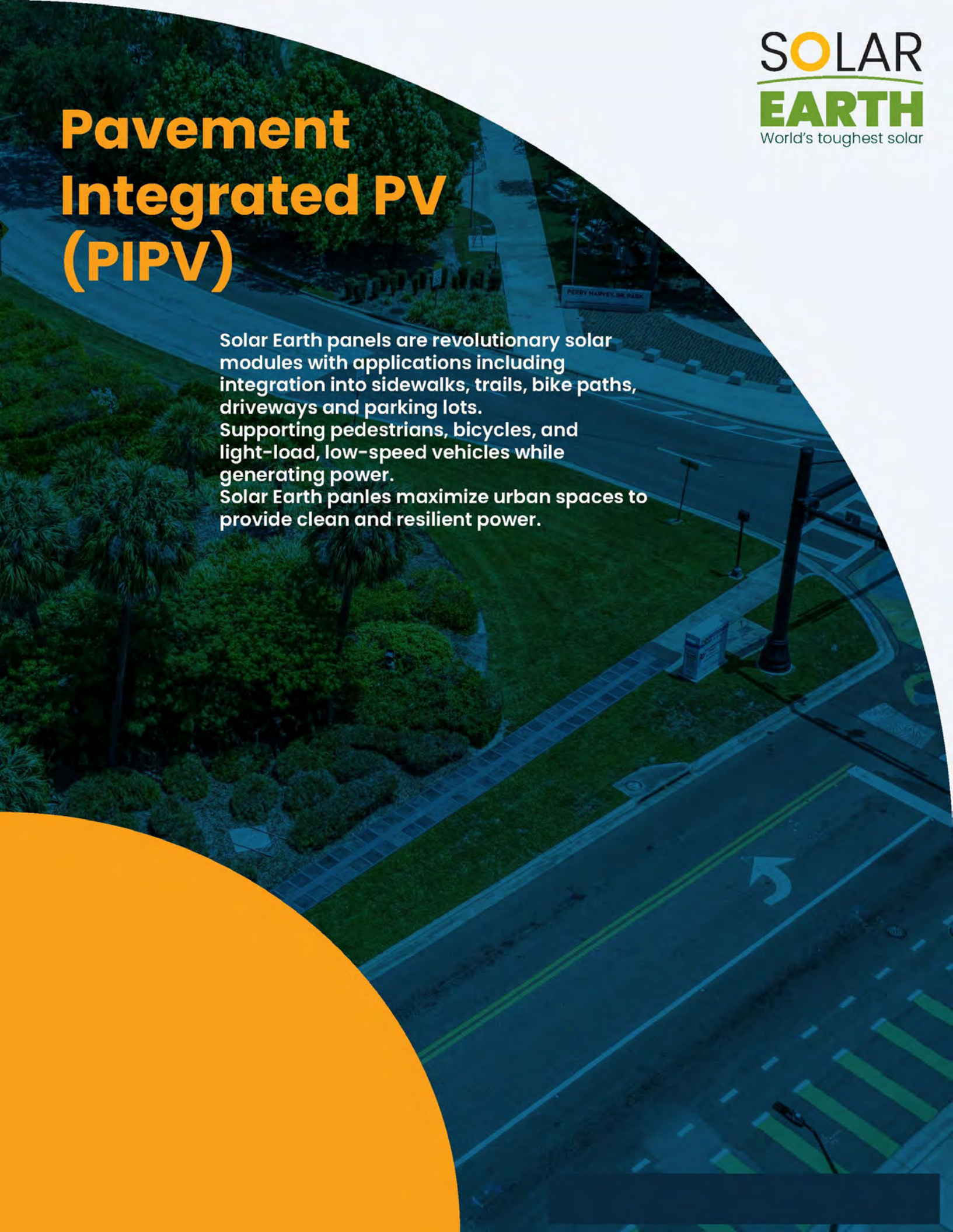
Pavement Integrated PV (PIPV)



Solar Earth panels are revolutionary solar modules with applications including integration into sidewalks, trails, bike paths, driveways and parking lots.
Supporting pedestrians, bicycles, and light-load, low-speed vehicles while generating power.
Solar Earth panles maximize urban spaces to provide clean and resilient power.

SOLAR EARTH
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Technical Data

ENVIROMENTAL	
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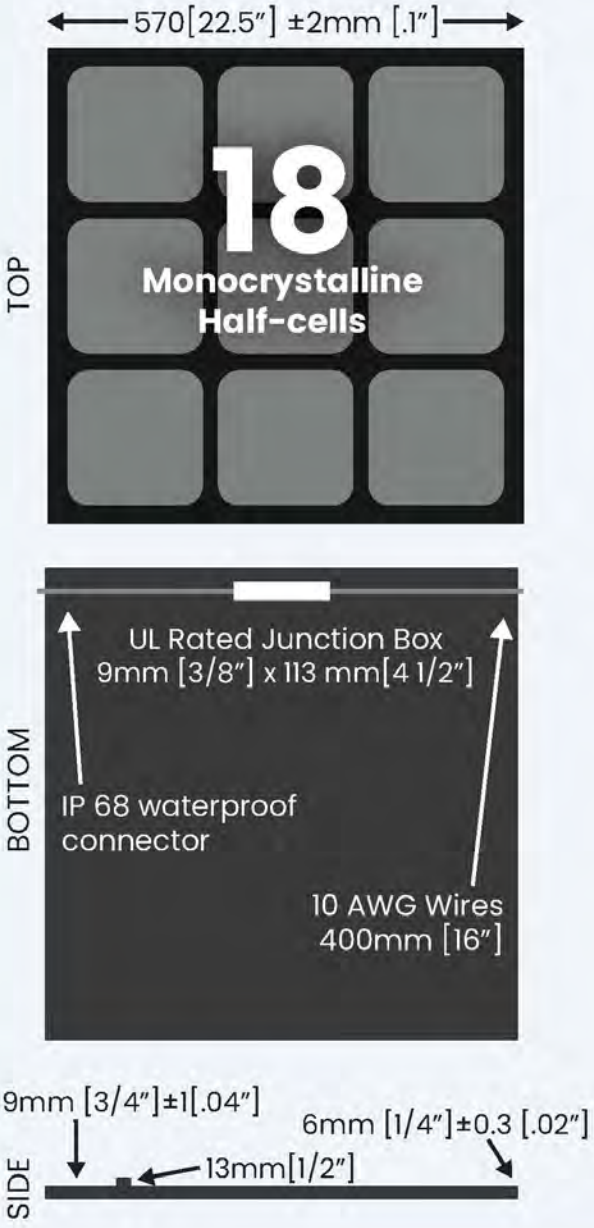
Point Current Maximum System	1000V
Voltage Overload Protection	15 A
Current Bypass Diodes	1

CE PSE RoHS COMPLIANT

Proprietary anti-skid surface



SOLAR EARTH
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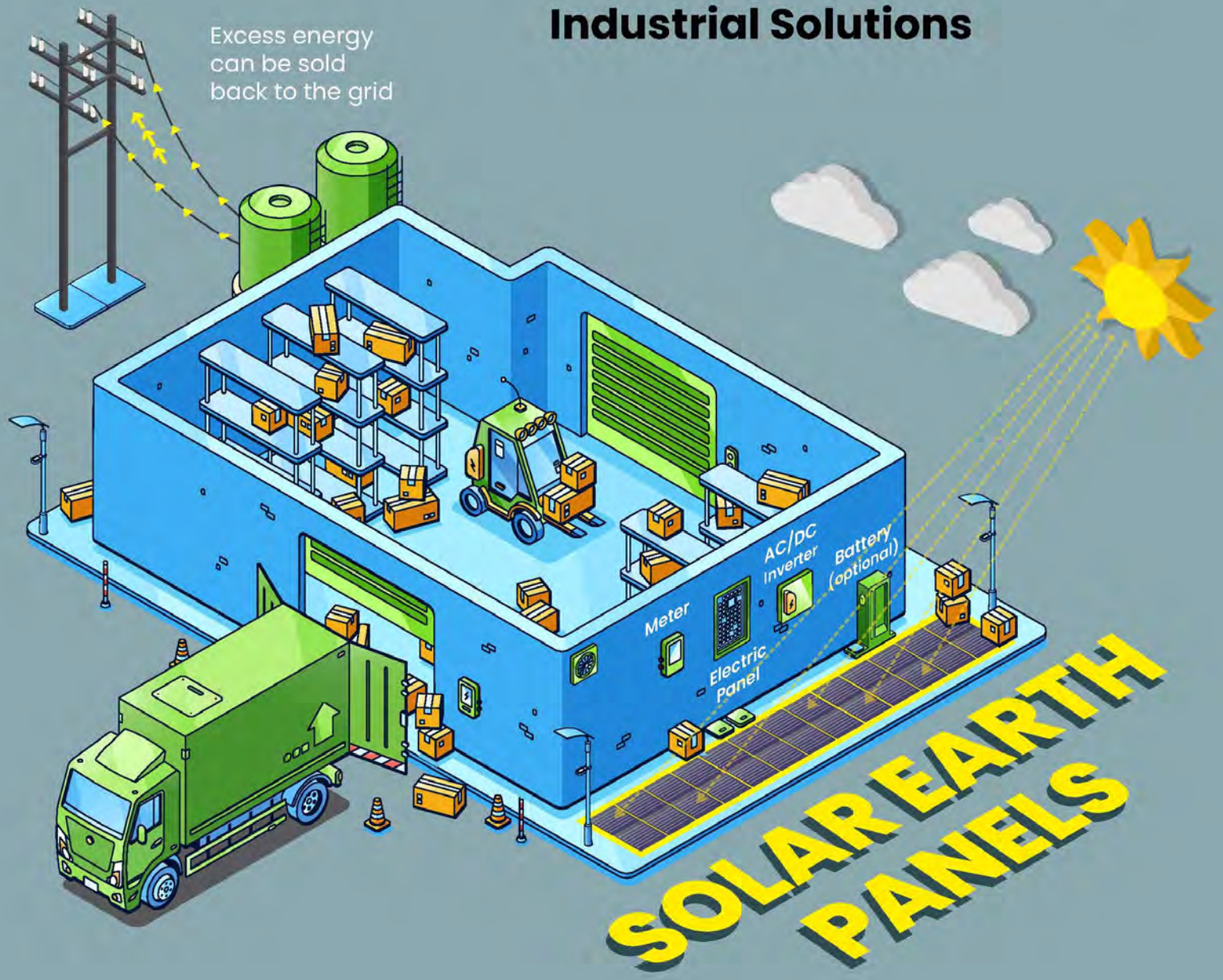
Construction Solutions

CONDITION	Direct Mounting		Molded Base	
	Adhesive	Clamps	Paver	Polymer
Compacted Gravel/Earth			✓	✓
Pavement/Asphalt & Solid Surfaces	✓	✓	✓	✓
Decking, Roofs & Uneven Surfaces			✓	✓
Low Profile	✓	✓	*	*
Heavy Loads	Static	Low-Speed	Low-Speed	Static

Industrial Solutions



SOLAR EARTH
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Turnkey Solutions

Solar Earth's expert personnel have been implementing pavement integrated PV power generation solutions since 2015. Our experienced staff can provide full turnkey solutions for all aspects of the pavement integrated PV power generation solution; from system design, material procurement, project management, and installation.
Engineering support for the development of cutting-edge products is also available on request.

SOLAR EARTH PANELS

are suitable for use in:

- Light, low speed roads, parking & driveways
- Bike Paths
- Walkways
- Marine Docks
- Deck and Patios
- Commercial Roofs
- And many more locations

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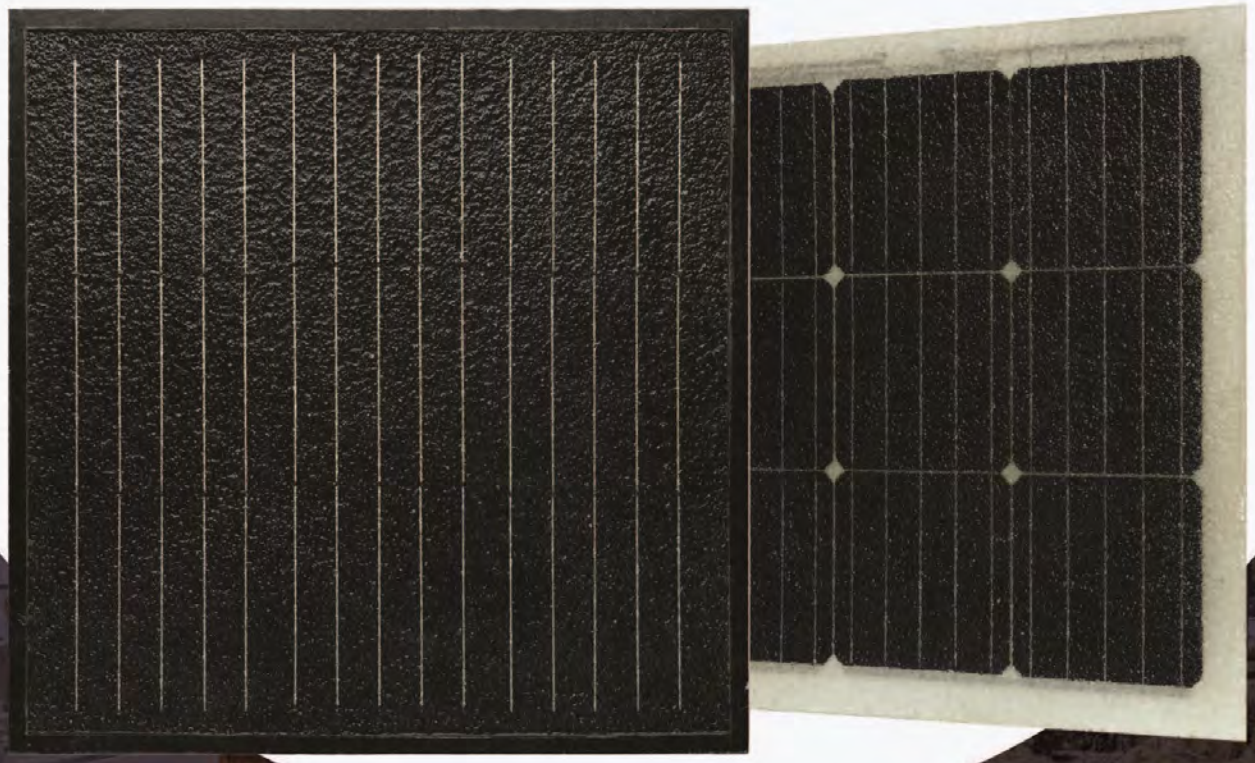

SOLAR EARTH CASE STUDIES

- **Rural Solar Microgrid**
  Daxing, Green Village - China
- **Solar Sidewalk**
  Tampa, Florida - USA
- **University Plaza**
  Kamloops, BC - Canada
- **Micromobility**
  Vancouver, BC - Canada

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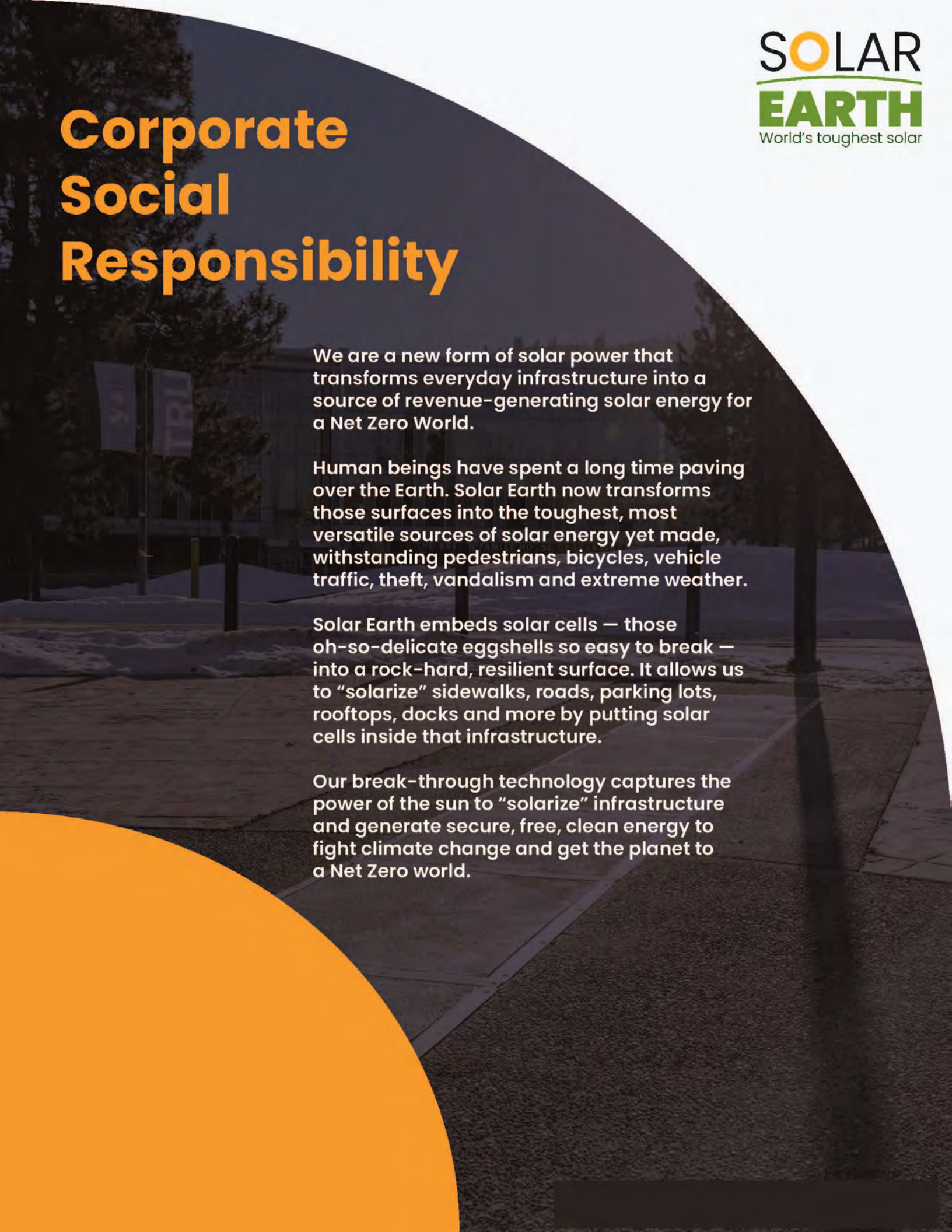
Corporate Social Responsibility



We are a new form of solar power that transforms everyday infrastructure into a source of revenue-generating solar energy for a Net Zero World.

Human beings have spent a long time paving over the Earth. Solar Earth now transforms those surfaces into the toughest, most versatile sources of solar energy yet made, withstanding pedestrians, bicycles, vehicle traffic, theft, vandalism and extreme weather.

Solar Earth embeds solar cells — those oh-so-delicate eggshells so easy to break — into a rock-hard, resilient surface. It allows us to "solarize" sidewalks, roads, parking lots, rooftops, docks and more by putting solar cells inside that infrastructure.

Our break-through technology captures the power of the sun to "solarize" infrastructure and generate secure, free, clean energy to fight climate change and get the planet to a Net Zero world.

Rural Solar Microgrid

Daxing, Green Village - China

CHALLENGE

For decades, China has installed solar power infrastructure for economic development in impoverished rural areas. Beyond limited roof-top space, ground-mounted installations impinge on farmland and living spaces.
Rural populations are dependent on the land for farming, limiting the potential of traditional solar projects. There is a need for renewable energy solutions that don't consume valuable farmland.

SOLUTION

Solar Earth installed 120 paving integrated PV panels at the recreation/community center in Ban Bi Dian Village of the Beijing Daxing District. The panels were integrated with pathways and parking lots. The Beijing Science and Technology Commission collaborated, along with the Beijing University of Technology and Tenio Group, to assess the solution for broader deployment across rural China.

RESULTS

Solar Earth's solution for Ban Bi Dian's yielded a steady stream of clean, carbon-free electricity without losing limited urban, commercial, industrial, or agricultural land. Traffic was estimated to 6,000 vehicles and 12,000 pedestrians crossing the solar road installation per year.

On average, 1 1 .6 MWhr of electricity was produced per year. An equivalent traditional solar installation would have consumed an estimated 120 sqm of land.

SOLAR EARTH FACTS

- **11.6 MWhr PRODUCED PER YEAR**
- **120 SQM OF FARMLAND SAVED**
- **9.2 TONNES OF CO_2e AVOIDED**

Solar Earth Benefits:

- Ideal, compact surface power generation
- Weather resistant
- Highly secure and resistant to theft and vandalism
- Creates a robust dual-use electric generating surface without compromising valuable land
- Long-term solar energy production solution for tight urban spaces
- Minimal maintenance and cleaning requirements

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The Opportunity

As climate change progresses, extreme weather events become more common and unpredictable. Aging power grids and traditional solar farms are vulnerable to blackouts, causing severe economic impacts and creating risk for citizens.

Solar Earth microgrids are an all-weather alternative that supply resiliant and reliable renewable energy using the power of the sun.

Solar Sidewalk

Tampa, Florida - USA

CHALLENGE

Tampa's city was looking for a cost-effective way to provide redundant power to a set of traffic lights in an intersection critical for emergency vehicle transportation. A particular requirement was operability through hurricanes, which are common in the region. The incumbent solution was a battery back-up combined with portable diesel generators that city crews would deploy in a crisis.

SOLUTION

Solar Earth deployed 84 panels on a sidewalk bordering the critical intersection. The panels were integrated into the sidewalk with our FRP surface mounting solution without any significant alterations to the area or the sidewalk. The resilient solar sidewalk includes a 72-hour battery back-up system to provide reliable power to the traffic lights.

BENEFITS

The Solar Earth sidewalk provides continuous power to the traffic lights independent of the state's grid. The system is resilient against extreme wind and flooding.

Costly generators and crews are no longer required at the intersection in times of crisis. Additionally, the city can sell the power generated by the solar power system when not in use. Over a ten-year lifetime, the City of Tampa will save an estimated US$ 5,000 by reducing costs and generating revenue.

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SOLAR EARTH FACTS

- CONTINUOUS BACK-UP POWER
- 3.2 KW PEAK, 30 SQM (323 SQFT)
- US$ 5,000 - PROJECTED 10-YEAR SAVINGS

Solar Earth Benefits:

- Intersection works during hurricanes or flooding
- Highly secure and resistant to theft and vandalism
- Excess power continually generated and goes back into grid
- Generates capital return and reduces fossil fuel use
- Long-term solar energy production solution for tight urban spaces
- Minimal maintenance and cleaning requirements

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Net-Zero Construction

A net-zero-energy structure produces enough renewable energy to meet its own annual energy consumption requirements, thus reducing demand for non-renewable energy production. Net-zero buildings lower environmental impacts, lower operating and maintenance costs, are more resilient to power outages and natural disasters and improve energy security.

University Plaza

Kamloops, BC - Canada

CHALLENGE

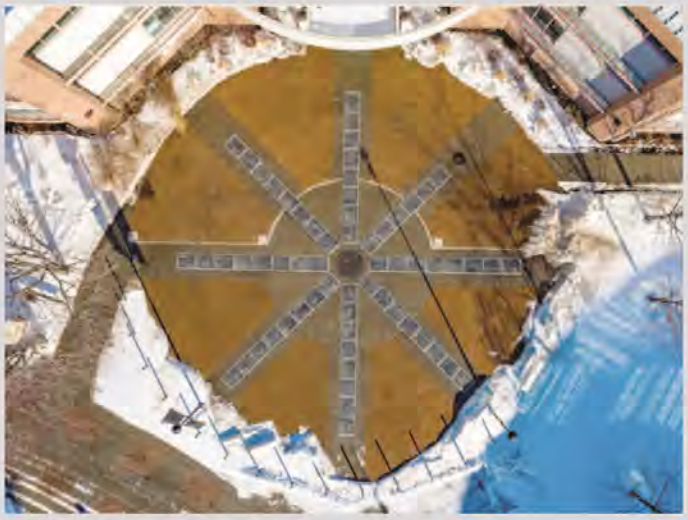
As an advanced educational institution, Thompson Rivers University, wanted to educate their students in new green technologies and was seeking solutions to yield a net-zero energy campus.

SOLUTION

Solar Earth was able to partner with TRU and build Canada's first solar sidewalk, along with a Solar Plaza. This installation is designed to power the computer lab adjacent to the panels in the courtyard.

BENEFITS

Placing Solar Earth panels in the compass formation in the courtyard is both aesthetically pleasing and functional. Fulfilling Thompson Rivers University's renewable power educational goal, these panels have enriched the student population's experience with net-zero build techniques.
Further, the panels now give this courtyard a return on the capital funds invested through powering the computer lab. It is a big step forward for traditional sunk cost infrastructure and earns a tremendous amount of credit within net-zero construction. The panels' ability to move solar energy from a post-construction thought into initial design integration makes net-zero construction a reality.



SOLAR EARTH FACTS

- 72.5 SQM OF URBAN LAND FREED
- 6.1 KW PEAK, 48.3 SQM (520 SQFT)
- ALL WEATHER OPERATION

Solar Earth Benefits:

- Ideal, compact surface power solution
- Weather-resistant power generation solution
- Highly secure and resistant to theft
- Creates a robust dual-use electric generating surface without compromising valuable land
- Long-term solar energy production solution for tight urban spaces
- Minimal maintenance and cleaning requirements

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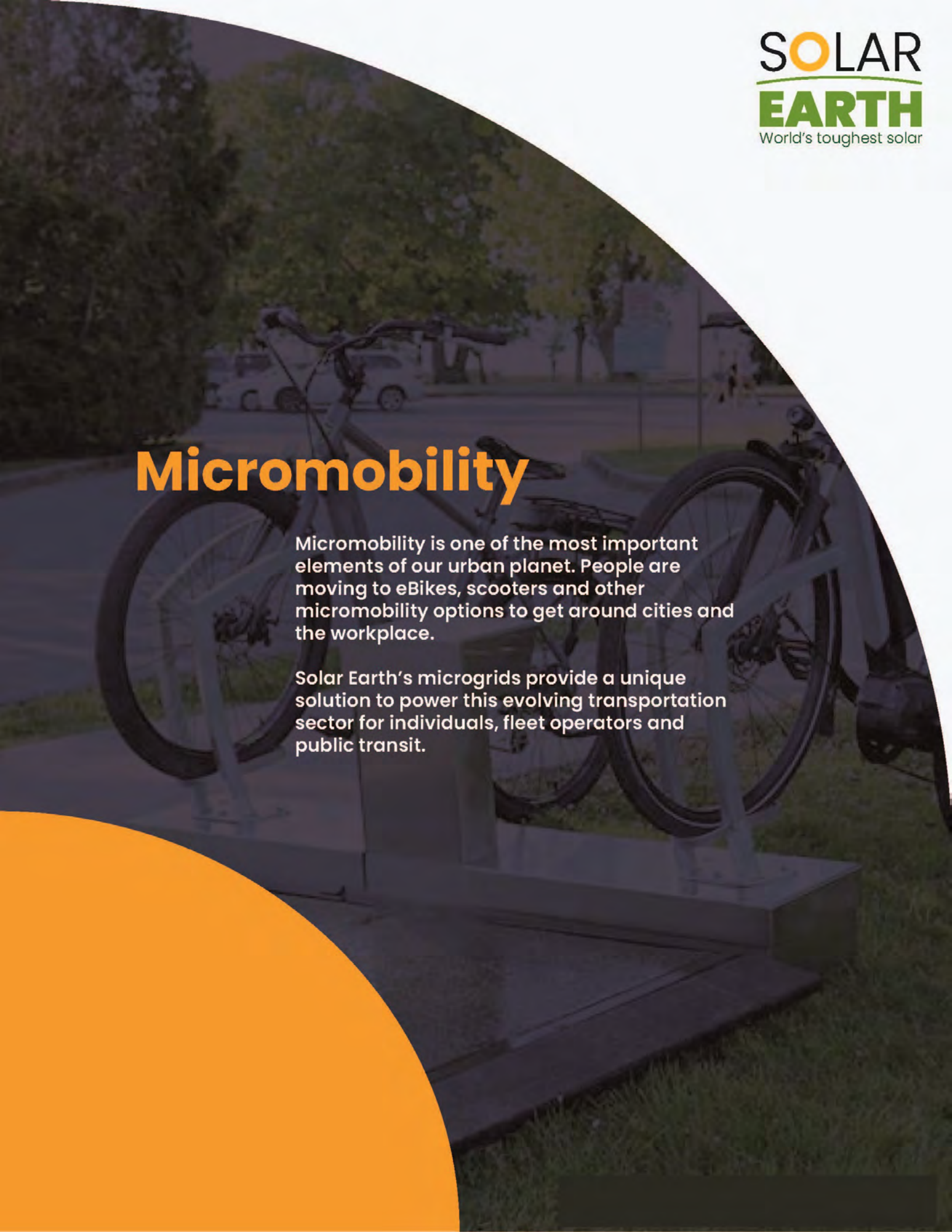

Micromobility

Micromobility is one of the most important elements of our urban planet. People are moving to eBikes, scooters and other micromobility options to get around cities and the workplace.

Solar Earth's microgrids provide a unique solution to power this evolving transportation sector for individuals, fleet operators and public transit.

Micromobility

Vancouver, BC - Canada

CHALLENGE

Vancouver-based micromobility infrastructure company, Urban Racks, saw the potential of e- bikes, a more energy-efficient and less polluting mode of transport. After deciding to bring an e-bike charging solution to the market, a solution was needed to power e-bikes across a wide variety of locations.

SOLUTION

Urban Racks utilized Solar Earth's panels to create an easily deployable e-bike charging station, able to be located almost anywhere e-bikes are used. The easy-to-install Solar Earth panels were integrated into infrastructure co-located with the Urban Racks e-bike charging station, serving as a sidewalk that captures solar power.

BENEFITS

With Solar Earth's low maintenance and dual-use PIPV, Urban Racks was able to develop the product needed in order to provide a readily deployable, sustainable e-bike charging station.

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SOLAR EARTH FACTS

- STAND-ALONE SOLAR POWER
- ON AND OFF GRID APPLICATIONS
- SIDEWALK INSTALLATION
- TRUE NET-ZERO POWER

Solar Earth Benefits:

- Ideal, compact surface power solution
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