

### Safe Harbor

This presentation contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These forward looking statements include information, among other things, concerning: our possible or assumed future results of operations; future demands for solar energy solutions; business strategies; technology developments; new products and services; financing and investment plans; dividend policy; competitive position; industry and regulatory environment; general economic conditions; supply chain and logistics, potential growth opportunities; and the effects of competition. Forward-looking statements are only predictions based on our current expectations and are inherently subject to risks and uncertainties. They should not be considered guarantees of future results, which could differ materially from the results set forth in, contemplated by, or underlying this presentation.

Factors that could cause actual results to differ materially from our expectations are described in the reports filed by SolarEdge with the Securities and Exchange Commission and we encourage you to review our filings carefully, especially the sections entitled "Risk Factors" in our Annual Report Form 10K.

SolarEdge undertakes no duty or obligation to update any forward-looking statements contained in this presentation as a result of new information, future events or changes in its expectations.

This presentation also describes non-GAAP revenues, gross margin, operating expenses, operating income, net income and non-GAAP net diluted earnings per share, which are not measures prepared in accordance with U.S. GAAP (i.e. "Non-GAAP" measures). The Non-GAAP measures are presented in this presentation as we believe that they provide investors with a means of evaluating and understanding how SolarEdge's management evaluates the company's operating performance. These Non-GAAP measures should not be considered in isolation from, as substitutes for, or superior to financial measures prepared in accordance with U.S. GAAP.

In addition, this presentation contains market data from certain third-party sources. This information is based on industry surveys and the preparer's expertise in the industry and there can be no assurance that any such market data is accurate or that any such industry forecasts will be achieved. Although we have not independently verified the accuracy of such market data and industry forecasts, we believe that the market data is reliable and that the industry forecasts are reasonable.



## Management present today



Zivi Lando CEO

Joined 2009



Ronen Faier Chief Financial Officer

Joined 2011



Rachel Prishkolnik VP General Counsel & Corporate Secretary

Joined 2010



Meir Adest Chief Product Officer

Founder



**Uri Bechor**Chief Operating
Officer

Joined 2019



**Yogev Barak**Chief Marketing
Officer

Joined 2021



Peter Mathews
North America
General Manager

Joined 2012



**Daniel Huber** Rest of World General Manager

Joined 2012



Alfred Karlstetter Europe General Manager

Joined 2012



Nadav Zafrir Chairman of the Board

Since 2019









## Where is the world heading

Electrification Decentralization People solar edge Technology & innovation



Operational excellence



Global presence





solaredge

# In loving memory of Guy Sella

CEO & Chairman, Founder (1964-2019)





## Global Market Leadership

### 2014

Rank	Company
1	SMA
2	ABB
3	Omron
4	TMEIC
5	Tabuchi
6	Schneider Electric
7	Enphase Energy
8	Sungrow
9	Huawei
10	SolarEdge

### 2017

Rank	Company
1	Huawei
2	SMA
3	Sungrow
4	SolarEdge
5	Enphase Energy
6	ABB
7	Schneider Electric
8	Omron
9	Fronius
10	Goodwe

2020 (Ranked first since 2018)

	·
Rank	Company
1	SolarEdge
2	Sungrow
3	SMA
4	Huawei
5	Enphase Energy
6	Fronius
7	Fimer
8	Growatt
9	Power Electronics
10	Ginlong

Source: World PV inverter supplier rankings by revenues, IHS PV installation tracker fourth quarter 2021 Rankings are for each specific year



### Why we lead the Solar PV Market

- Differentiated, proprietary solar inverter architecture
- Continuous innovation leadership
- Trusted brand known for superior performance and customer focus
- Well-diversified mix across solar markets and adjacent industries
- Vertical integration enabling customized solutions and a better customer experience across all end-markets
- Deep and established relationships with solar PV installers, investors and stakeholders

### Our leadership in numbers



34
Present in Countries

84M

Power Optimizers shipped

**29GW** 

of our systems shipped worldwide

2.5M

Monitored systems around the world

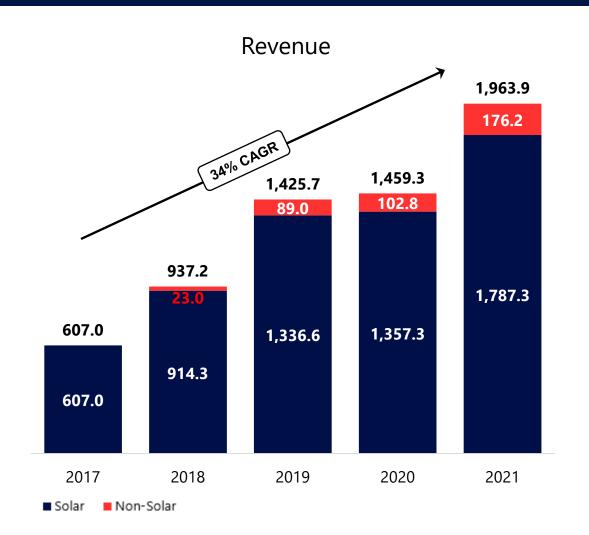
>400

Awarded patents and ~420 additional patent applications

<sup>\*</sup> Based on revenues. Source: IHS PV installation tracker fourth quarter 2021 Note: SolarEdge internal figures are as of Q4 2021



## Annual growth











The renewable energy opportunity Zivi Lando, CEO

Operational excellence
Uri Bechor, Chief Operating Officer

Insights from around the world

Alfred Karlstetter, Peter Mathews, Daniel Huber SolarEdge regional General Managers Rachel Prishkolnik, VP General Counsel

SolarEdge growth strategy
Zivi Lando, CEO

Financial update
Ronen Faier, Chief Financial Officer

**Imagine** 

Yogev Barak, Chief Marketing Officer

Summary Zivi Lando, CEO

ESG update

The SolarEdge 'Edge'
Meir Adest, Founder, Chief Product Officer

Cocktails with management

Lunch





## Tectonic shift in the energy market



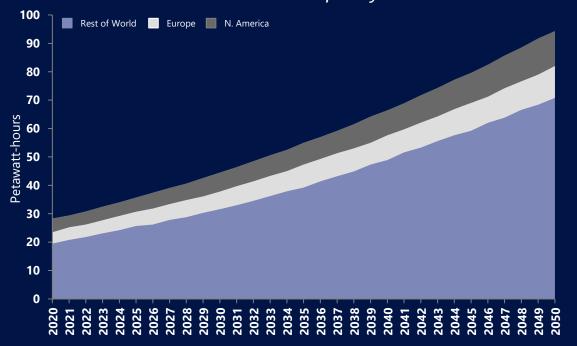
- Exponential growth in energy demand
- Transition from centralized, fossil fuel-based energy to clean, distributed, renewable, energy



## Rapidly growing worldwide demand for electricity

#### **Electricity Consumption\***

Global electricity consumption expected to double by 2035 and more than triple by 2050





<sup>\*\*</sup> United Nations Department of Economic and Social Affairs, The World Population Prospects 2019: Highlights

#### **Growing Energy Demand\*\***

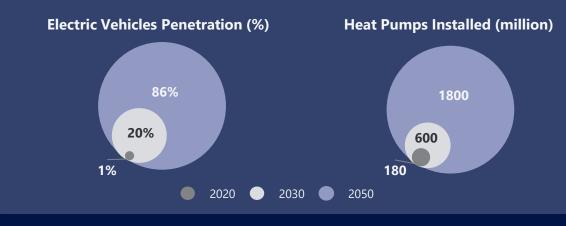




Urbanization to increase from 55% to 68%

(+2.4B people)

#### **Electrification of Areas Previously Dominated by Fossil Fuels\*\*\***





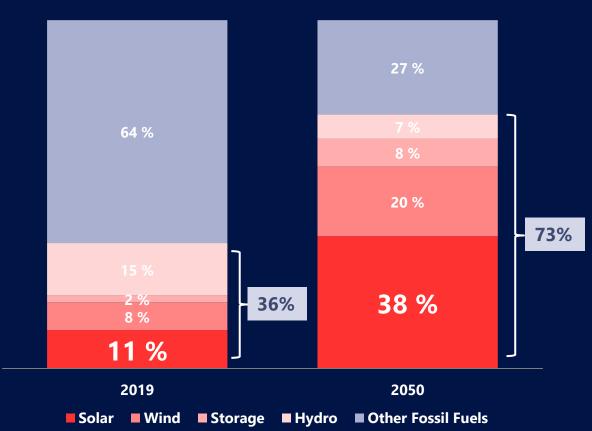
<sup>\*\*\*</sup> Net Zero by 2050 – A Roadmap for the Global Energy Sector, International Energy Agency (May 2021); UN 2017 Revision of World Population Prospects

## Renewables set to be the dominant electricity source





**Corporations** 



Nation-level initiatives to decarbonize (Glasgow, Paris)

**Governments** 

Decarbonization commitments in most industries driven by ESG standards Growing demand for electrification

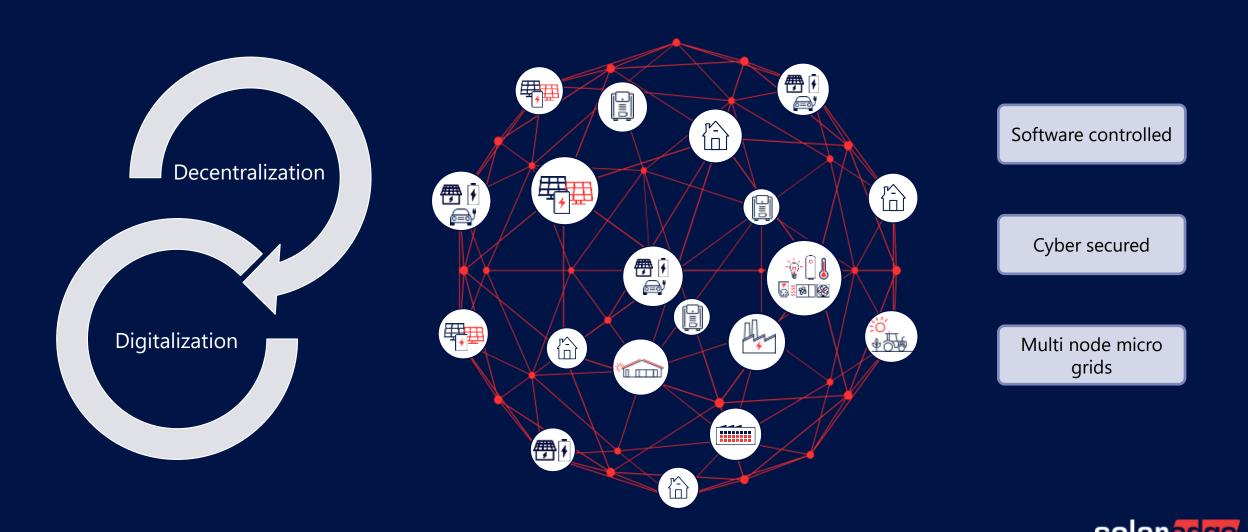
Drive for energy

independence

**Individuals** 



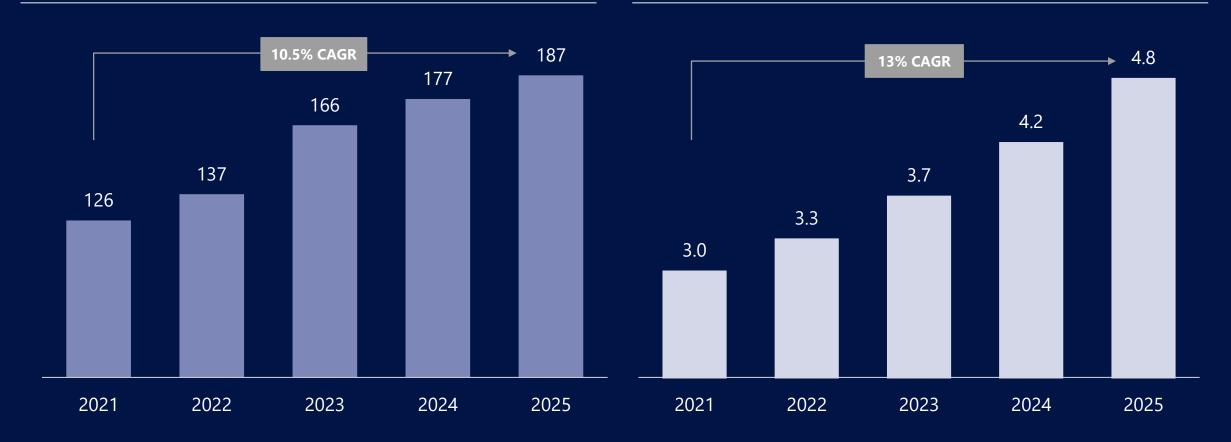
## Decentralization and digitalization of energy networks



## Long runway of growth for the Solar industry ahead



#### **Energy Storage Inverter Installations (GW)\*\***





Solar markets across the world



Solar PV market size by application 2021





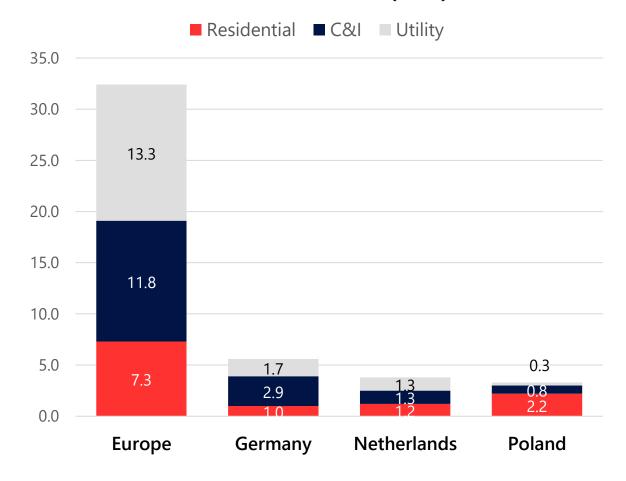
## SolarEdge Europe



## Alfred Karlstetter General Manager, Europe

- 59 years old, married, 1 child, Munich area, Germany
- Industrial Engineering degree, University of Applied Sciences
- 18 years global experience in Semiconductor Industry: Siemens Matshushita, Kemet Electronics
- 12 years experience in PV inverter industry:
  - GM Europe at SMA Technology AG
  - Samil Power, China
  - SolarEdge Technologies last 7 years
- SolarEdge in Europe:
  - 13 regional offices in Europe, selling into >25 countries
  - 300 employees in Europe
  - >10,000 loyal installers

### 2021 Market Size (GW)



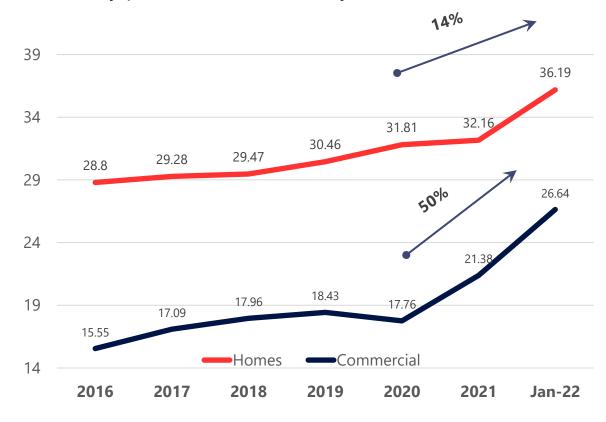
Source: IHS PV installation tracker fourth quarter 2021



## Europe market trends

- Electricity prices have increased significantly and trend is expected to continue
- Oil & gas prices continue to increase
- Energy independence is high priority for European countries
  - Heating homes moving from O&G to Heat Pumps
  - Demand for production of more renewable energy is on the rise

#### Electricity price trends in Germany in €cent/kWh



Source: Federal Association of the Energy and Water Industries (BDEW), Status: 01/2022 <a href="https://www.bdew.de/media/documents/220124\_BDEW-Strompreisanalyse Januar\_2022\_24.01.2022\_final.pdf">https://www.bdew.de/media/documents/220124\_BDEW-Strompreisanalyse Januar\_2022\_24.01.2022\_final.pdf</a>



## Netherlands residential

2.0 GW
Installed SolarEdge systems

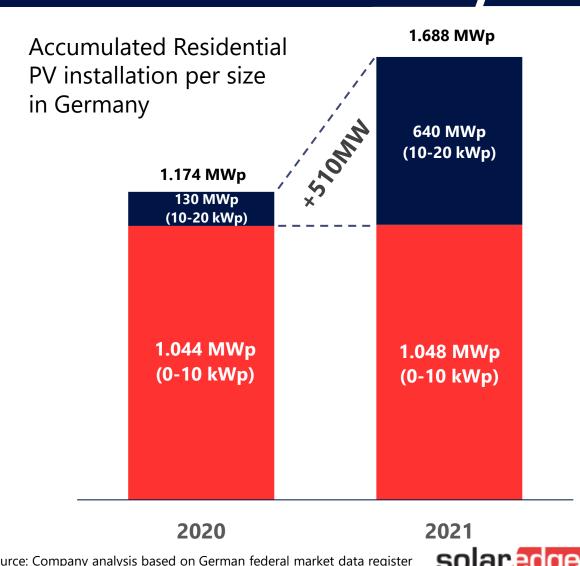
**520,000** sites Installed SolarEdge systems

**5,000**Residential installers



### Germany: Residential PV dynamics

- Residential PV installation size growing
- PV module power increases expected to continue
- Energy price increases and rise in consumption are driving the demand
- Many homeowners looking to maximize roof coverage with PV on all sides of roofing
- The above conditions make market ripe for SolarEdge technology and product offering

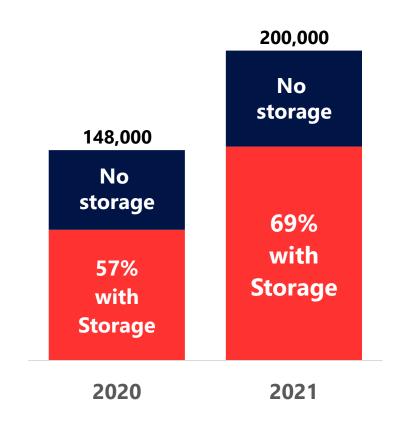


Source: Company analysis based on German federal market data register https://www.marktstammdatenregister.de/MaStR/



- 200,000 new PV installations 0-20kWp in CY2021
- 69% with storage, expected to increase in 2022
- Average storage capacity per home increasing
- Seeing customer preference for a full system from one vendor
- Demand for EV chargers is expected to continue growing
- SolarEdge offers full systems solution: PV, storage & EV charger

#### **Residential PV installations from 0-20KWp**



Source: Company analysis based on German federal market data register <a href="https://www.marktstammdatenregister.de/MaStR/">https://www.marktstammdatenregister.de/MaStR/</a>

### Commercial market trend

## Case study of an actual project of a German supplier to tier 1 automotive manufacturing facilities

- High electricity prices and increased demand for carbon emission certificates driving companies to invest in PV, storage and EV charger fleets
- Investment ~€4M
- ROI ~5 years
  - Electricity savings of ~€650,000 annually
  - Increase of value of carbon emission certificates ~€150,000 annually
- Carbon emission reduction ~15,000 t/a
- SolarEdge provides engineering and project support direct with the Investor/Company owner

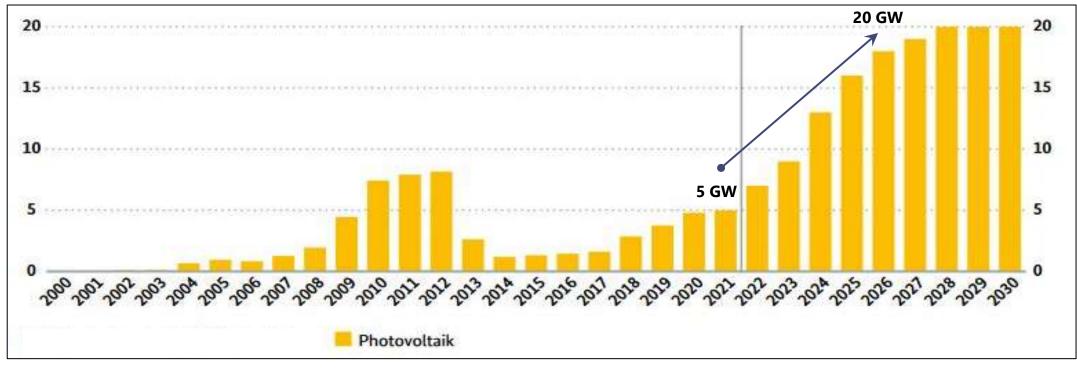




## Europe PV growth

- Markets in Europe are growing and expected to continue to grow (Germany as an example)
- SolarEdge has a leading position thanks to its existing close relations with installers and project investors

Opening balance of climate protection report 2022: Expansion of photovoltaic







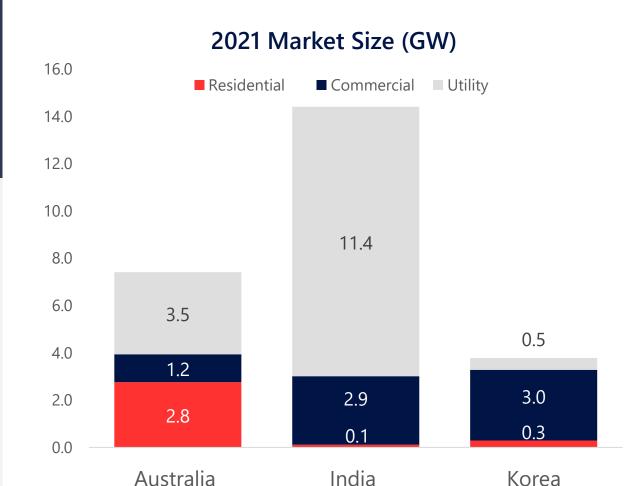
## SolarEdge Rest of the World (APAC\*, LATAM, MEA)



## Daniel Huber VP & General Manager, RoW

- 15 years of solar experience. Joined SolarEdge in 2010
- Held multiple sales leadership positions for SolarEdge in Europe and APAC
- RoW General Manager since 2019
- Regional offices in Melbourne, Tokyo, Bangalore, Taipei, Bangkok, Herzeliya, Sao Paolo, Seoul, Cape Town, Shanghai
- Diversified portfolio to address diversified region
- B.Sc in Industrial Engineering & Management from Tel Aviv University





Source: IHS PV installation tracker fourth quarter 2021



## Three strategic pillars for growth



Increase share within our served market



Expand served market through new segments and applications

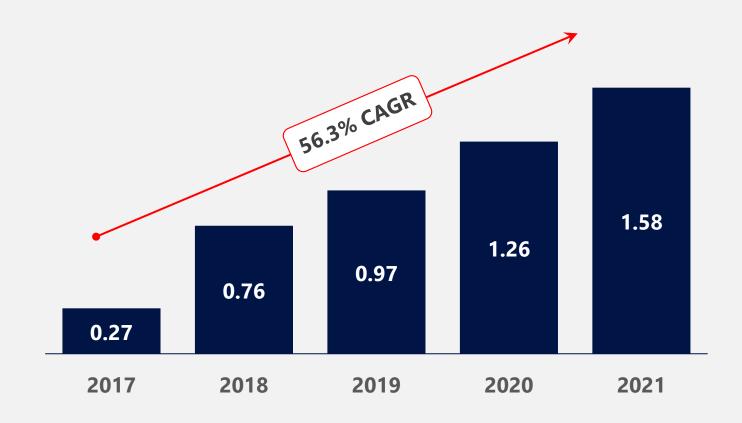


Expand served market through geographic expansion



## Growing market share

### Commercial & Industrial RoW SolarEdge sales, GWDC\*





## Small Utility ground mount market expanding

- Growth through expansion of the Commercial segment
- Know-how in place
- Successfully deployed across multiple small utility sites

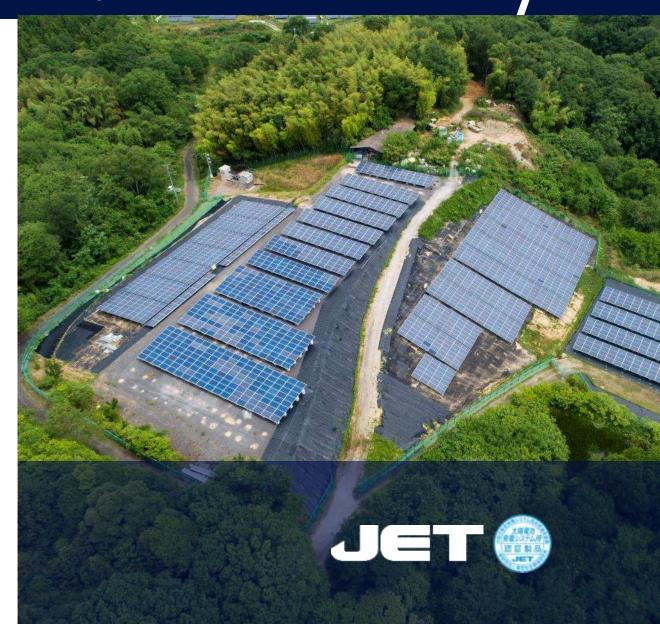


### Application development – Japan Repower (retrofit)

- 25GW\* of ground mount sites will end warranty period in coming years, many of which will face the dilemma of "Replace" or "Repower"
- Japan is a good market for repowering
- SolarEdge offers a good solution for repowering
- Already repowered close to 200 sites with positive results, and have healthy pipeline for more in 2022 and beyond

\*Calculated based on installations from 2012 to 2015 Source: https://www.fit-portal.go.jp/PublicInfoSummary and https://www.enecho.meti.go.jp/category/saving\_and\_new/saiene/statistics/past.html





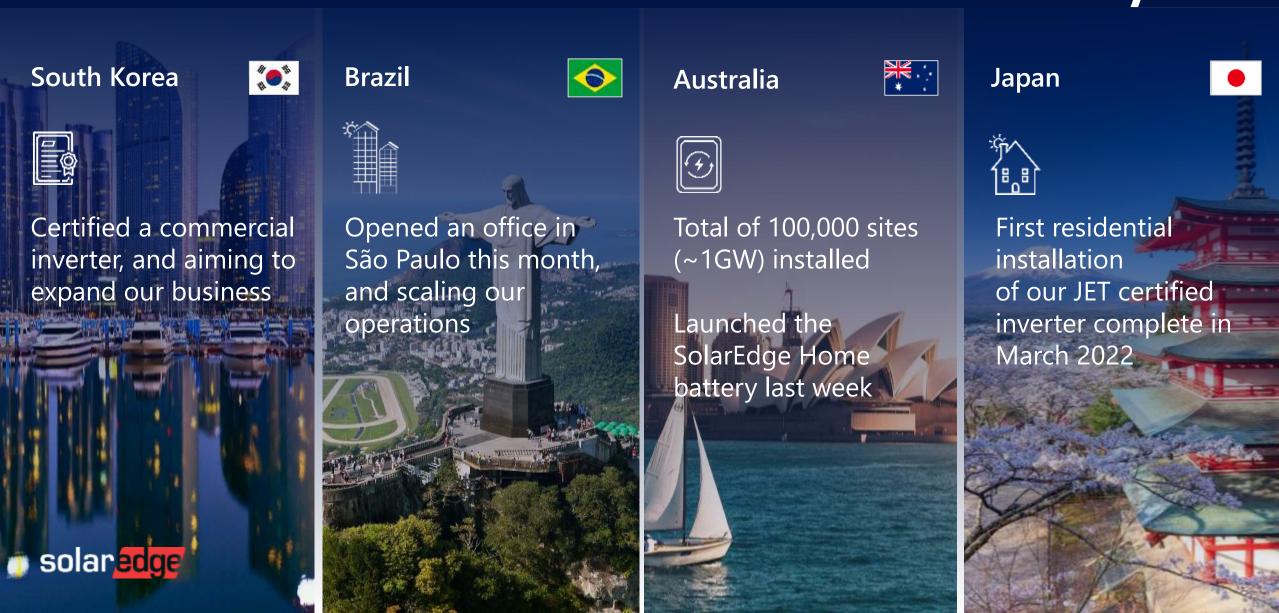
## Applications development – Floating PV

- Lack of available ground is becoming a common challenge with growing demand for PV
- 'Dual use' segments are growing
- Floating PV are ground mount sites with good MLPE fit due to floating mismatch, common use of bi-facial modules and safety issues
- SolarEdge solutions are installed and are being installed in many MW's of such sites in several countries





## Geographic expansion



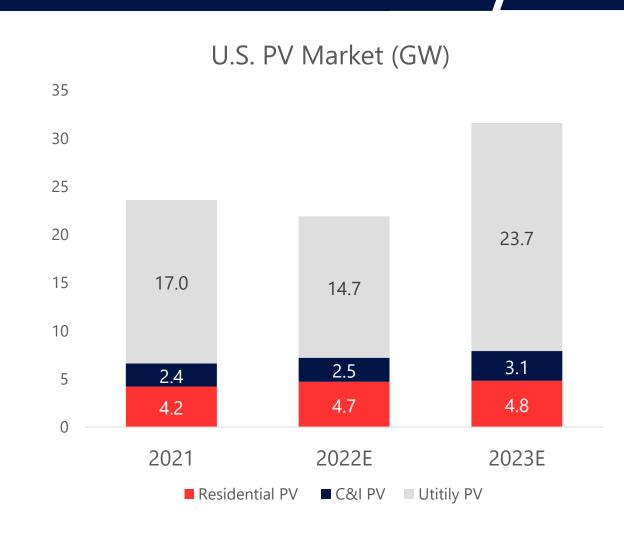


#### SolarEdge North America



## Peter Mathews General Manager North America

- Bay Area local since 1986, married, 2 children, grew up in Maine
- 15 years in solar; SolarEdge GM since 2012
- Prior experience: 25 year in semiconductor (FormFactor, Raychem, Digital Eqpt)
- B.Sc. Chemical Engineering, Cornell University
- SolarEdge North America: 330 employees in 29 states



Source: Woodmac Annual US PV Installed Capacity and Forecasts (MWdc), Cumulative Pre-2010 – 2032 (Wood Mackenzie and SEIA's US Solar Market Insight)



#### Residential home storage

## Reasons more homeowners are choosing batteries



Planned utility outages



Extreme weather events



Savings on Utility rates



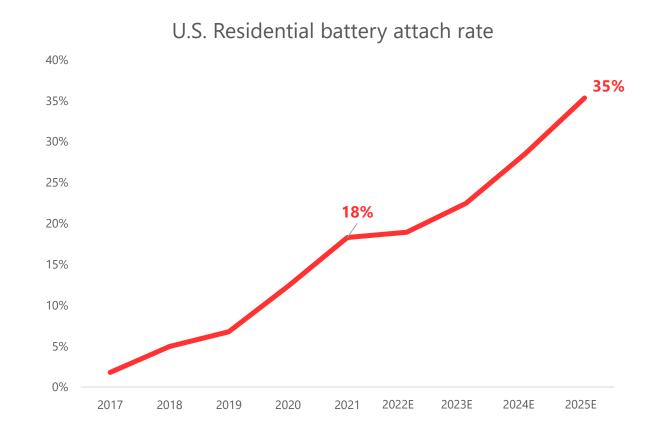
Time of use management



Independence from grid



Complete control of energy produced & stored

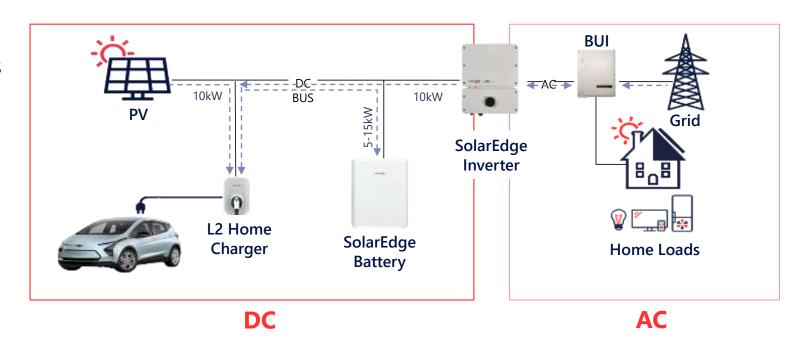


Source: Source: IHS PV installation tracker fourth quarter 2021



#### SolarEdge DC coupled architecture: More energy, more options

- DC coupled = more energy, fewer conversions, higher efficiency
  - More energy to store and use whether the grid is on or off
  - Longer backup time
  - Bigger solar arrays
  - Fewer home electrical upgrades
  - Scalable solution for EV, heating/cooling
  - Enhanced safety with SAFE-DC





## SolarEdge Community Solar



# Overcoming a challenging Community Solar install

SolarEdge Community Solar Gardens maximize energy yield and design flexibility, while reducing O&M costs

SolarEdge was selected for its ability to overcome traditional challenges to community solar projects, including undulating ground, which can restrict module placement, and shading from nearby trees.

James Ponchez, Sunlight General Capital

Community Solar spotlight: New Jersey

130 MW

Installed + pipeline

100

Sites

33,000

Homeowners and

400

Businesses served



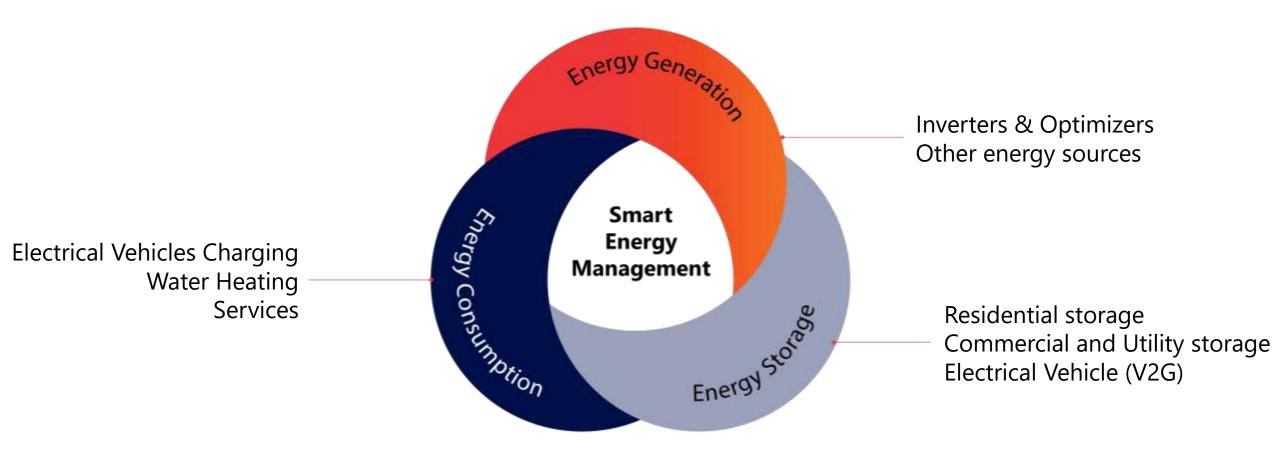




#### **Our Strategy**

To be a leading global provider of HW, SW and services in renewable energy markets where technology will improve the production, storage and consumption of energy

	Scale		Develop				Explore
	***************************************						
_	Residential	Commercial	Utility	Storage (non-Solar)	eMobility	Critical Power	Opportunities in Energy Transformation
Power Electronics							
Battery Technology							
Charging Technology							-
Thermodynamics							
Manufacturing Tech.							
System / Data							
Services							
	Geographic Expansion						
							solaredge







#### Residential Solar 1.0

Harvest maximum power from the sun and feed it to the grid (or zero the meter)





#### Residential Solar 2.0

Optimizes energy production, consumption and storage

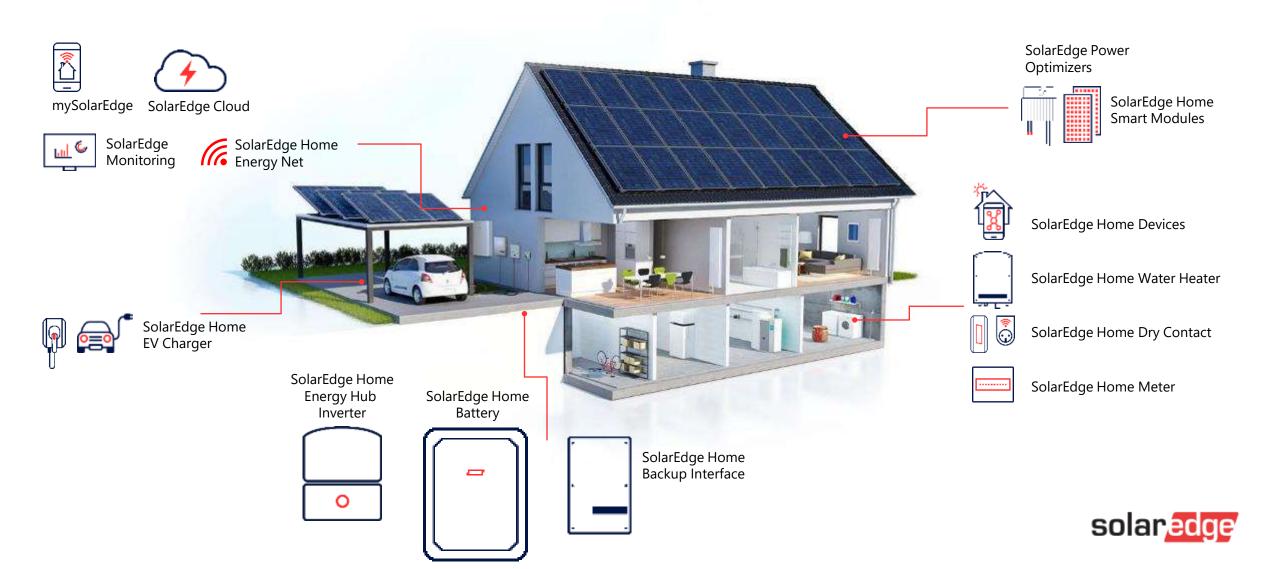
Maximizes self-consumption, manages backup events and provides grid independence

Sophisticated home energy management system, decision making algorithms and improved financials





## Introducing SolarEdge Home





## Inverters and Power Optimizers







#### 2022 offering\*

- Single phase up to 11.4kW; 3 phase up to 15kW
- DC Coupled battery optimized for maximum self consumption and backup
- Hub of SolarEdge Home Network
- Supports 550W panels with no clipping
- Embedded arc detection (AC and DC) and active temperature monitoring

#### In development

- 10 second commissioning
- Advanced generator integration and control
- Heat pump control for maximized self consumption
- SiC based residential inverters (fast switching), GaN based optimizers
- Support for 600W+ panels and G12 half-cut
- Proliferation of AC socket non-storage backup (in Japan)



#### SolarEdge Home Batteries



#### 2022 offering\*

- Single phase residential battery released world-wide (10kWh)
- 3 phase to launch in H2'22
- Quick installation (SolarEdge Home Network)
- DC Coupled, low voltage and high voltage
- Can be charged from clipped energy
- UL9540A certified
- Gen. 2 based on Kokam cells in 2023



#### SolarEdge Home Loads









controlled by mySolarEdge app

#### 2022 offering\*

- EV Charger, single and three phase
- Dry switch for critical load (HVAC, well pump, etc), quick installation with SolarEdge Home Network. Release H2'22
- Hot Water Controller
- AC coupled Generator support (phase 1)

#### In development

- EV Charger:
  - Bi-directional (vehicle connected as battery)
  - DC coupled and high-speed DC charging
- Heat Pump integration into the SolarEdge Home eco-system
- Generator advanced integration into the SolarEdge Home eco-system



# SolarEdge Home Operating System EV Charger

#### 2022 offering\*

- Optimized self consumption and backup
- Time of use management
- Weather guard & backup reserve
- BIPV support by designer
- Main loads control

#### In the future

- Dynamic decision based on consumption and production modeling
- On-grid and off-grid functionality, including smart backup capabilities designed to optimize system behavior during backup
- 3<sup>rd</sup> party integrations



#### Ease the installation journey

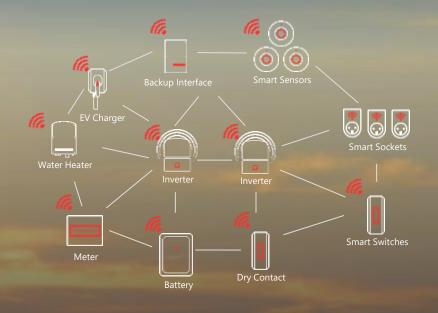
solaredge

Reduce installation time and increase installation success rate





#### SolarEdge Home Network



- Remote firmware upgrade and system configuration
- Guided installation and commissioning through installer app
- Automatic layout transfer from Designer to SetApp
- Installation verification
- Homeowner referral through mySolarEdge

- Wireless connectivity between all system devices
- Simple plug and play connection
- Automatic device detection and configuration

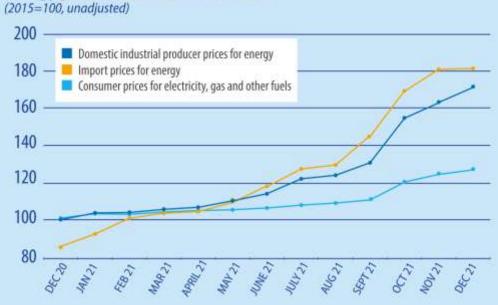




## Growing demand for Commercial

#### Soaring electricity prices

#### Energy prices in the euro area, 2021



Source: https://ec.europa.eu/eurostat/web/products-eurostat-news/-/edn-20220210-2

Corporations are driven to meet sustainability goals



Every company and every industry will be transformed by the transition to a net zero world. The question is, will you lead, or will you be led? Larry Fink, Blackrock CEO, 2022 Letter to CEOs



The Securities and Exchange Commission proposed rule amendments that would require a domestic or foreign registrant to include certain climate-related information in its registration statements and periodic reports, such as on Form 10-K

Enhancement and Standardization of Climate-Related Disclosures Fact Sheet 2022



## Commercial systems becoming more comprehensive

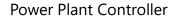


### SolarEdge Commercial solution

Three Phase Inverters with Synergy Technology Up to 120kW

Three Phase Inverter Up to 40kW

Power Optimizers S – Series up to 1400W



Monitoring and Alert Platform









High input current, bifacial and high-power PV modules both M10 and G12

Orchestration of multiple energy sources

Module-level asset management tool with detailed performance data

#### Storage



Integration with 3rd party storage

#### Accessories



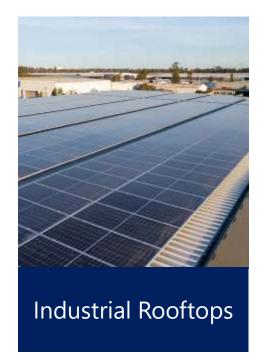
Environmental Sensors and Satellite-based PR





Building blocks for any size of Commercial installation

## Diversified Commercial applications









Carports & Floating



Farms & Agriculture





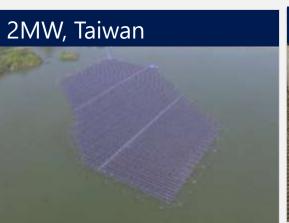
#### Floating PV Systems

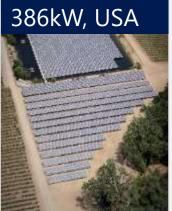
#### Why SolarEdge?

- Advanced safety features reducing electrocution risk on water during installation and maintenance
- Module mismatch mitigation caused by bird droppings, ripples or other factors
- Due to difficulty of access to the floating system, module-level asset management platform enabling easier operation and maintenance and remote troubleshooting
- Resistance to harsh environment











#### Carports

#### Why SolarEdge?

- Advanced safety features
- Design flexibility enables installation of strings of uneven lengths and strings in multiple orientations and different roof facets
- PV + EV energy management capabilities



Companies around the world are installing carports to reduce electricity costs while protecting fleet vehicles parked under from weather events.

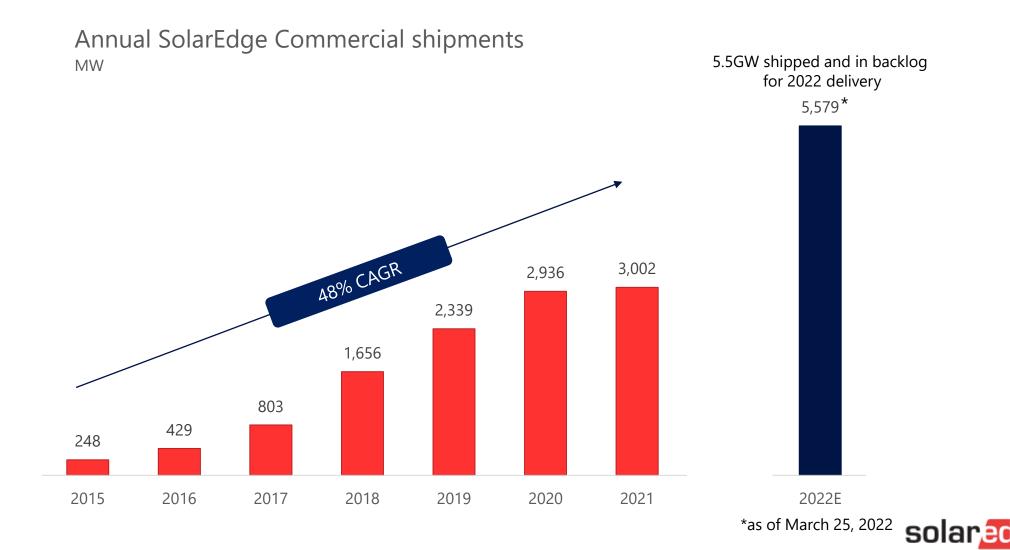








### SolarEdge Commercial shipments

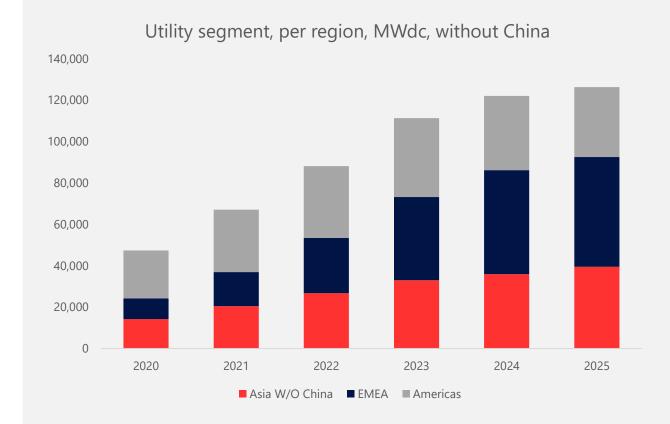


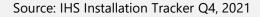


### Utility PV market trends

- Continuous reduction in cost per watt, favorable regulations and increased cost of fossil generated electricity, drive accelerated growth in Utility segment
- China, rest of Asia and NA are biggest markets
- Corporate drive to offset carbon emissions drives increased demand
- Growth in storage attach rates
- Interest in dual use of land where constrained

#### Increase in Utility PV Annual Capacity across Regions







#### SolarEdge is already in the Utility market

- SolarEdge is already a player in the Utility segment
  - Strong demand among early adopters with specific need for optimization
  - Backlog of projects representing ~150MW\*\*
  - A single 77MW site in Taiwan under construction

#### **SolarEdge Utility Installed Base**

~400MW\*

Utility-scale ground mount projects

~15

Utility projects over 10MW

#### Representative Projects

50MW, Israel



15MW, Turkey



25MW, Japan



11MW, USA





<sup>\*</sup>Defined as ground mount systems above 1MW \*\*for 2022 delivery

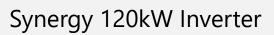
## Step 1: Leverage existing technology



Our current offering of inverters and optimizers address specific challenges in varied cases:

- Integrated Solar + Wind fields (shading)
- Unusual terrain outlays
- Bifacial modules
- Safety
- Cyber Security
- Balance of System (BOS) challenges
- 0&M







P1100 2x1 Optimizer



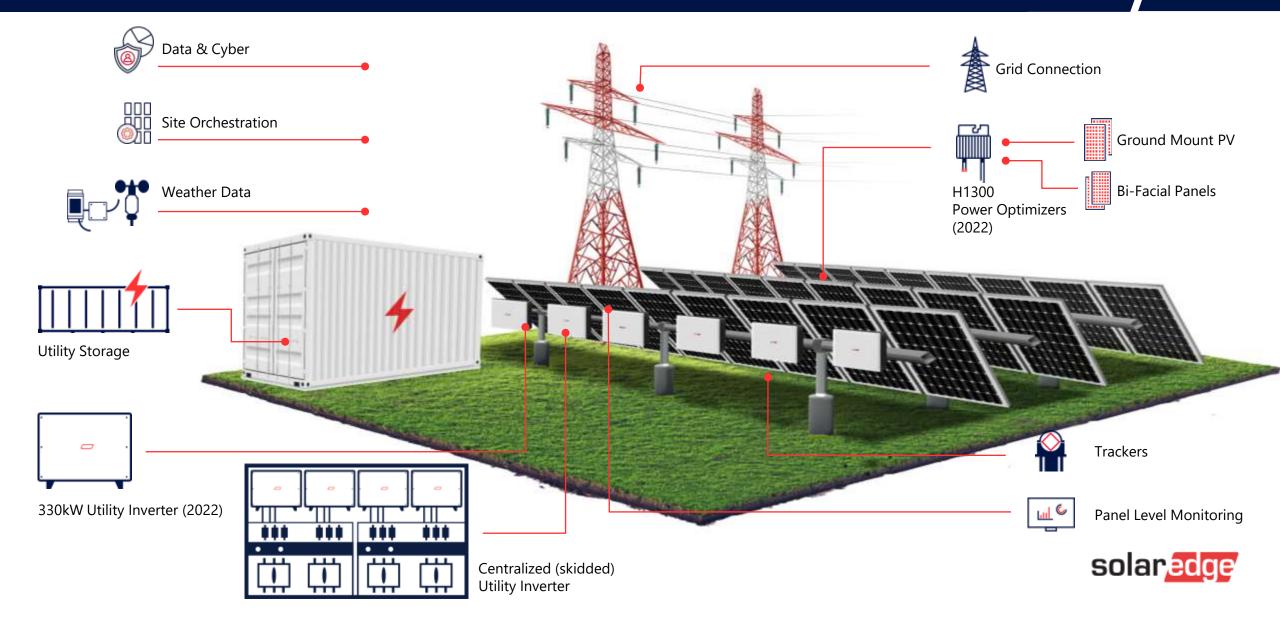
### Step 2: Utility specific inverter and optimizer

- Lower cost per watt
- Dedicated Power Optimizer for higher power modules
- Longer strings for reduced balance of system costs
- DC Coupled storage ready
- Enhanced cyber security and monitoring features
- Beta testing in progress
- Commercial release expected in H2'22
- Meaningful revenue expected in 2023





## Step 3: Optimized Utility system



# Trackers and SolarEdge

- Trackers widely used in Utilty market
- Optimization of entire system is critical to maximize value for investors
- In particular dual use and other emerging Utility applications require specific tracking solutions
- With that in mind, in 2021 we aquired SolarGik, a small startup founded by veterans, including one of the founders of Brightsource, a leading thermal-solar manufacturer / developer
- SolarGik was established on the belief that tracking in PV can be improved based on experience from the thermal solar industry
- Our intent in the coming years is to develop a tracking portfolio customized for the various applications, integrated with the SolarEdge Commercial and Utility offering
- Currently running test sites including small ground mount and agro-PV





# Energy Storage

Innovative cell technology and owned manufacturing drive product differentiation and capacity benefits



\$61B

Global cumulative TAM for battery storage by 2025\*

25X

Expected increase in battery storage capacity by 2030\*\*



### Storage applications

- SolarEdge is already a supplier of Li-Ion cell and storage systems for high power / high energy applications
- With the increased capacity to come from Sella 2, opportunity opens to accelerate the penetration in these applications









#### New and alternative chemistries

- Owning the chemistry for making battery cells enables reaching cell characteristics and manufacturing processes that can optimize battery performance and reduce manufacturing costs
- NMC Roadmap
  - Currently manufacturing NMC 622
  - Exploring NMC811 and future high nickel cathodes
- LFP
  - Developing own process for LFP for CSS and ESS application
- Future anodes
  - Development of new anodes compositions expected to extend cycle life and enhance safety
- New manufacturing methodologies planned to reduce use of hazardous materials





# Our learning in eMobility

- In full swing of supply to Stellantis of powertrain kits and batteries for E-Ducato light commercial vehicle
- The project is planned to continue at least until the middle of 2024
- We have learned to be a tier 1 automotive supplier, performing well on roads across Europe
- We have applied our expertise in quality and reliability from optimizer and inverter manufacturing lines
- Additional markets and opportunities are under evaluation or in pilot testing



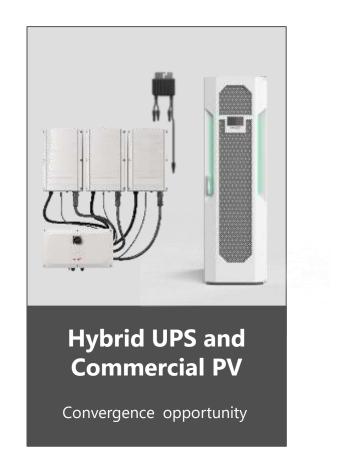


#### Critical Power













### **Energy transformation**

- The energy market is transforming
- Nodes are connected with each other
- Common technology building blocks shared across verticals and nodes
- Connecting and orchestrating the dots create new opportunities
- As a technology company we are constantly evaluating where we can provide differentiated solutions to accelerate the transition





### The future home

Is fully electric (vehicles, cooling & heating, water treatment)

Decentralized, feeding from multiple sources (PV, battery, generator, grid)

Interconnected with the community, neighborhood or a virtual micro grid





#### The future home

Consumes **more energy** and needs to sustain longer blackout periods

Can have solar panels, building-integrated PV (BIPV) or not have PV at all

Feeds from multiple energy sources: PV, batteries, generators or the grid, making it **resiliant** and cost effective



Not limited by **legacy infrastructure**, external grids or in-house wiring

Loads and sources are interconnected to **harmonize** production, consumption and storage of energy

Electricity, space heating & cooling, water heater and even waste management are connected together to **optimize energy use** 







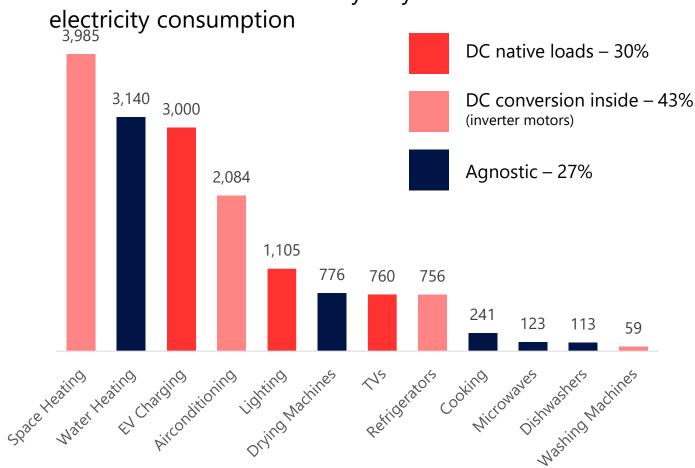
# Why is a DC home the natural choice?

- Nature is DC (no AC lightnings...)
- The road to net-zero is paved with PV and batteries electricity is produced and stored in DC
- Most loads are DC native
- No wasteful conversions (DC to AC to DC)
- Enhanced Safety (USB sockets for most loads)



### Efficiency gains will gradually move homes to DC

Future household estimated yearly domestic



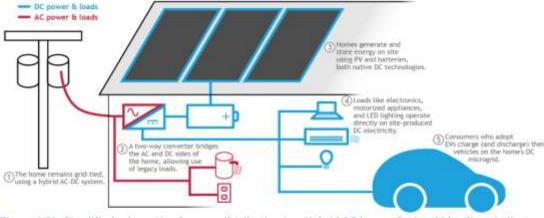
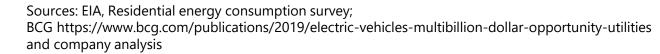


Figure 1(B): Simplified schematic of power distribution in a Hybrid-DC house. Red and blue lines indicate AC and DC distribution, respectively; red and blue shapes indicate AC and DC loads, respectively.

Source: Demand DC. Accelerating the Adoption of DC in the Home, CLASP





#### The future farm





### Agriculture sector challenges

- Global food demand is growing +70% supply required by 2050
- Agricultural land per capita is decreasing
   -23% in 20 years
- Labor scarcity
  average farmer>65y/o, 31% reduction in workforce between 2005-2016 (EU)
- Rising costs of inputs energy prices and fertilizer at all time high
- Climate change impacts extreme weather conditions causing crop failure and decrease available farmland
- Decarbonization demands20% global GHG emissions and 25% global energy consumption

Through 2050, more than \$60 billion of annual capital spending would be needed to enable more emissionsefficient farming

solaredge

Food demand is growing: https://www.nature.com/articles/s43016-021-00322-9
Agriculture land per capita is decreasing: https://ourworldindata.org/grapher/agricultural-area-per-capita
Number of people working in agriculture is decreasing: https://ourworldindata.org/employment-in-agriculture
Rising costs of inputs: https://www.cmegroup.com/openmarkets/agriculture/2022/Farming-Input-Costs-Are-Rising-How-Producers-are-Managing-the-Risk.html
Energy consumption of agriculture: https://energypedia.info/wiki/Energy\_within\_Food\_and\_Agricultural\_Value\_Chains

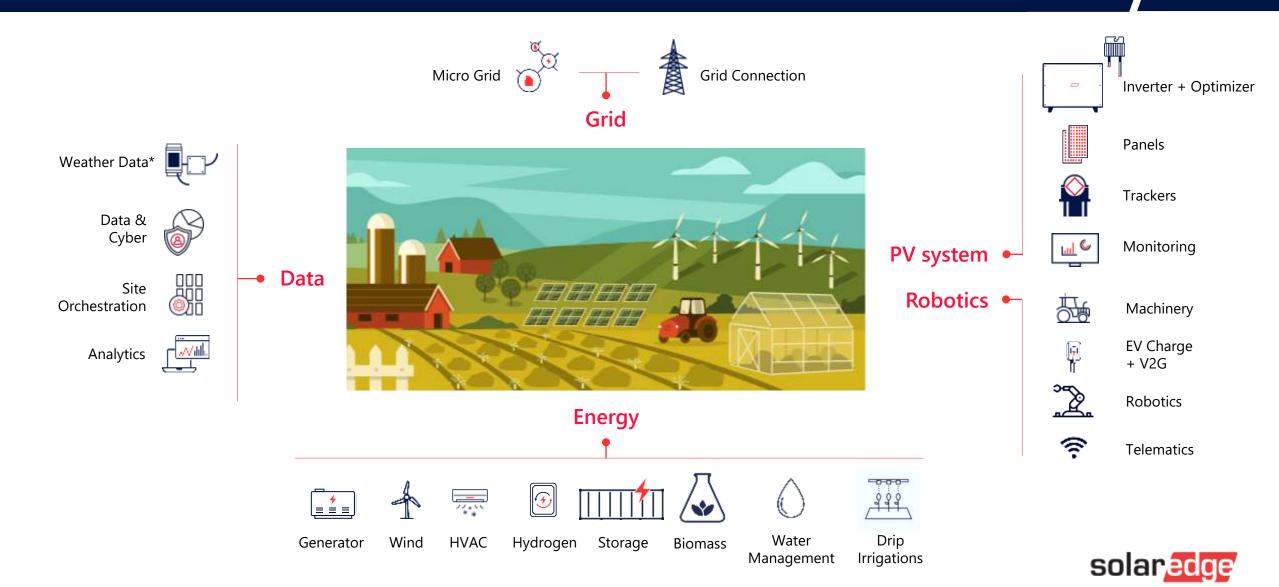
## Agro PV

- Enable dual use of agriculture land for energy production and agriculture activity
- Farmers get additional revenue stream, reduction in water usage and crops protection
- Use of electricity for on-farm activity and facilitate the electrification process of agriculture
- Solution for the rising demand of large scale solar





#### The Future Farm



#### Greenhouses

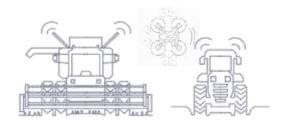
- Temperature regulation typically accounts for most of the primary energy demand for agriculture greenhouse
- Lighting, humidity and the mechanical equipment within a greenhouse also determines the levels of energy
- Solar energy technologies and strategies can sustainably and reliably meet the energy demands of agricultural
- Integrated semitransparent modules for energy generation, solar cooling and storage are increasing in use as means for managing the energy demand of greenhouses



### Opportunities in the future farm

#### **Future Ingredients**

Autonomous electric machinery



Zero emission Microgrid



#### **Building Blocks**



Battery Technology





Charging Technology

eMotor







System / Data

Manufacturing Technologies









Thermodynamics

Solar PV Services



### The energy transformation has just begun

- The building blocks we are mastering today will be the foundation of continued energy transformation in the future
- We are exploring opportunities to continue and lead this transformation



Power Electronics



Battery Technology



Charging Technology



Thermodynamics



Manufacturing Technology



System / Data



Services





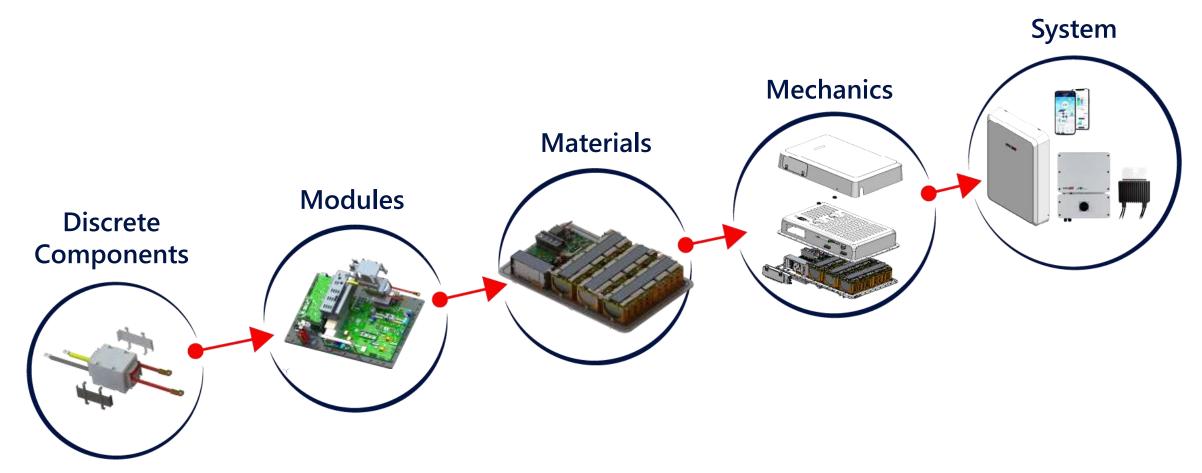
### Diverse in-house R&D expertise



## Rich multidisciplinary patent portfolio



# Owning the technology building blocks





#### Innovation in power conversion

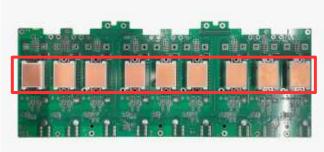
#### **Transition to Higher-Frequency Elements**

Enabling technology for higher efficiency and smaller-form factor

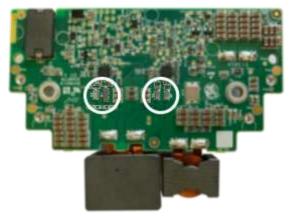
**SiC** – already in newly released and field deployed inverter & battery products

**GaN** – working prototypes for power optimizers





Inverter with SiC



Power Optimizer Design with GaN













### Strength from in-house ASIC design

- SolarEdge proprietary ASIC in inverters and power optimizers
- Designs based on internal silicon platform for fast development cycle
- Development platform designed for high voltage power application including mix-signal and digital silicon IPs
- Superior power management at small-footprint and with 25 year reliability
- Real-time configurable hardware and custom CPU architecture
- Designed to provide optimized and predictable system behavior



35 ASIC engineers



>225 combined years of experience



Engineers with experience from Texas Instruments, Intel, Tower, DSPG, Cadence, Broadcom





# Vertical integration

- Self-developed and self-manufactured magnetics and switching elements
- Developing in-house electrical capacitors
  - Targeting higher reliability of 2-3 times longer lifetime
  - Designed to allow higher working temperature





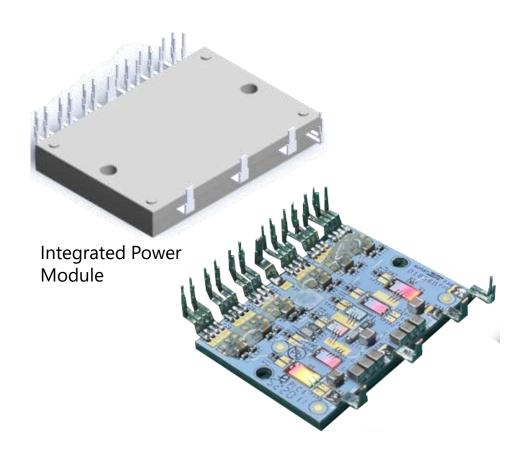


#### Sub-modules

- Developing in-house Integrated Power Module (IPM) for:
  - Enhanced electrical performance
  - Better thermal performance
  - Higher reliability
- Proprietary current sensors drive enhanced real-time performance and higher efficiency



Current sensor







# Owning full storage technology stack

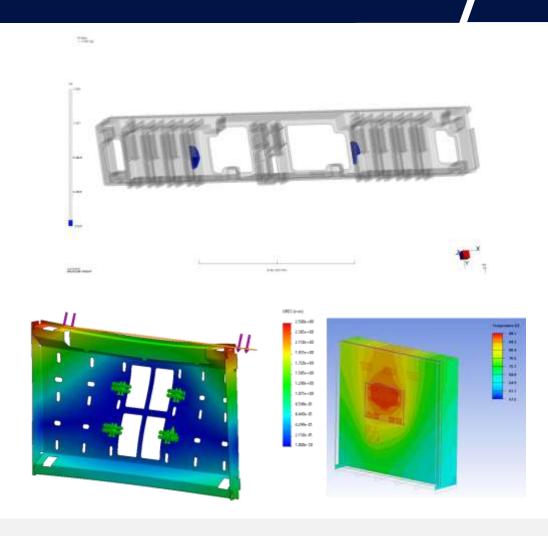
Cell Chemistry	Cell Design	Cell Manufacturing	Thermal Control	Battery packs	Battery electronics	Battery analytics
<ul> <li>NCM622</li> <li>NCM811</li> <li>LFP</li> </ul> Organic & Inorganic Coating  PE-Base Film	<ul> <li>Unipolar &amp; Bipolar</li> <li>Reduced internal resistance and low heat generation</li> <li>Enhanced High Power Cell</li> </ul>	<ul> <li>Z-fold technology</li> <li>High thermal conductivity and heat dissipation</li> </ul>	<ul> <li>Natural convection</li> <li>Forced Air</li> <li>Liquid Cooled</li> </ul>	<ul> <li>High C-rate</li> <li>Long cycle life</li> <li>Accommodate various voltage &amp; capacity requirements</li> <li>Safety features</li> </ul>	<ul> <li>BMS (Battery Management System)</li> <li>BPU (Battery Protection Unit)</li> </ul>	<ul> <li>Track voltage, current and temperature</li> <li>Alarm &amp; protect</li> </ul>





#### Our electro-mechanical edge

- In-house mechanical expertise and innovative approach complement our power electronics know-how
- Direct contribution to smaller form factors, higher reliability, robustness and safety
- Design for manufacturability (DFM)
- Advanced simulation tools to minimize iterations and expedite product time to market









# System elements

#### Communication



#### **Safety & Security**



#### **Data**



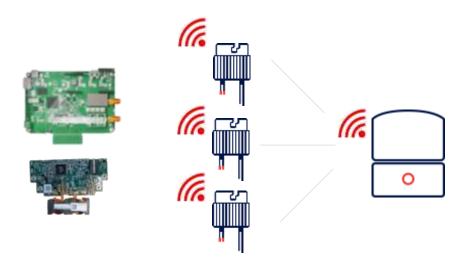
#### **Energy Management**





#### Robust communication is key

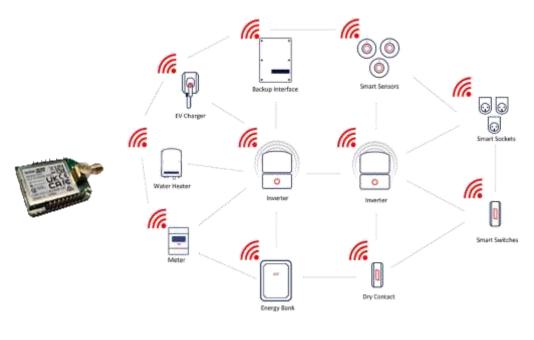
#### **Robust Core Communication**



3<sup>rd</sup> generation of direct DC Power Line Communication (HF PLC)

Introducing new technology for 3 second pairing, expanding capabilities for large scale PV (expected in H2'22)

#### Wireless Mesh Network



SolarEdge Home Network Sub giga-hertz radio communication allows wireless communication between system elements





## Holistic safety envelop



Built-in SafeDC™



**Rapid Shutdown** 



**Safety Triggers** 



Integrated Arc Fault Detection & Interruption



**Abnormal Temp Detection** 



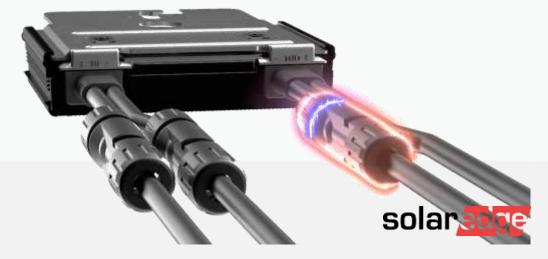
**Connection Validation** 





**Sense Connect Technology** 

Thermal anomalies sensing at the connector level





# Cyber Security



Code reviews by dedicated security applications



Continuous & automatic integrity checks

Automatic intrusion prevention



Secured private ISO27001 certified

Strong authentication & encrypted cloud communication

Automatic intrusion detection

System security validation





# Big data system capabilities



SolarEdge Information Platform

>2.5M

monitored connected systems with

>7.5

Billion telemetries per day



Real-Time PV Production

From >470K reported zip codes



Consumption profiles

From ~100 countries



Solar panel degradation

Over 71MC connected panels



Roof map



EV Charging



TOU rates and other utility plans



User preferences



Weather and Radiation



Physical obstacles

#### **Data Fusion**

Value-added services and enhanced user experience made possible









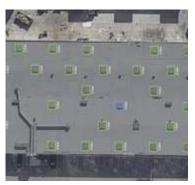




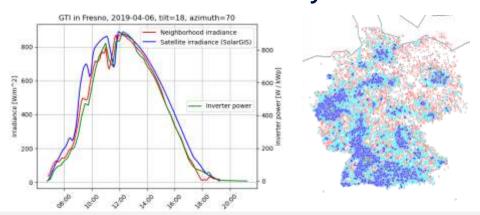
## Smart data analytics – Examples

#### **Computer Vision**

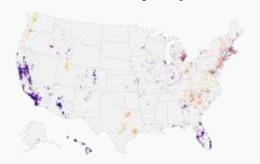




#### **Predictive Analytics**

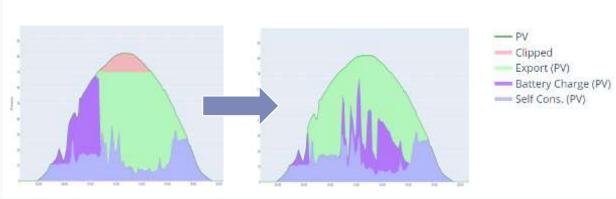


# Weather Guard with County-specific Machine Learning





#### Al based battery management











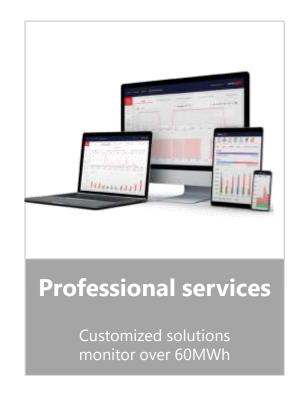


## Applications – Examples















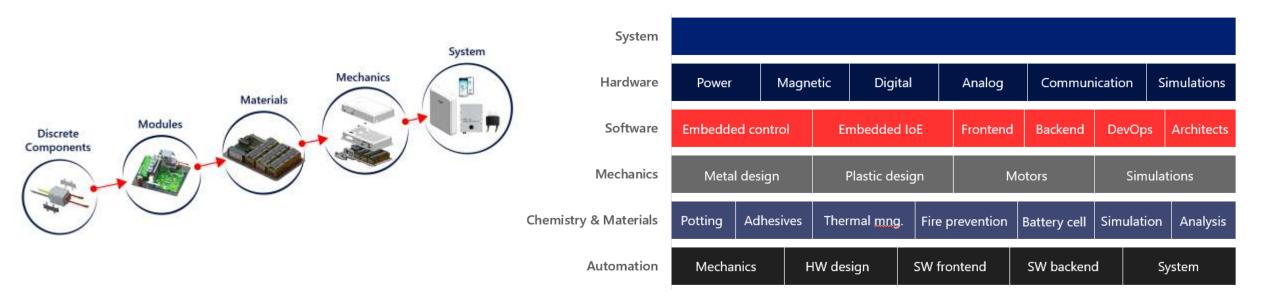




## Summary

# **Our Technology**

# Our People







# SolarEdge manufacturing overview

#### Progress in the last two years

- Opened our Copy Smart manufacturing facility Sella 1, Israel
- Opened a North American manufacturing site in Mexico
- Assembling all optimizers on automated lines
- Started producing inverters on an automated line
- Opened a battery manufacturing facility in Hungary
- Ramped certified automotive facility in Italy
- Managed Covid and supply chain challenges

#### Manufacturing in numbers

20

Automated assembly lines for optimizers

7,000

Manufacturing workers\*

400

Suppliers worldwide

790K

Inverters produced in 2021

8

Factories in 3 continents

**1.5M sqf** 

Manufacturing floor space\*

**140TB** 

Accumulated production data

18.6M

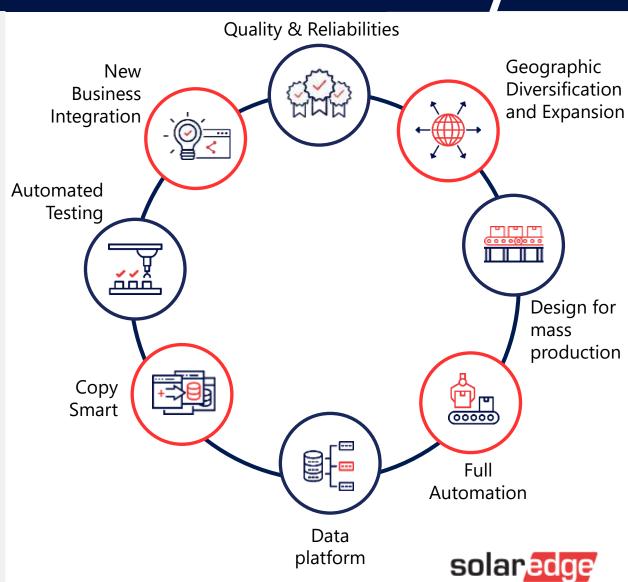
Optimizers produced in 2021



\* Including tier 1 contract manufacturing and own manufacturing

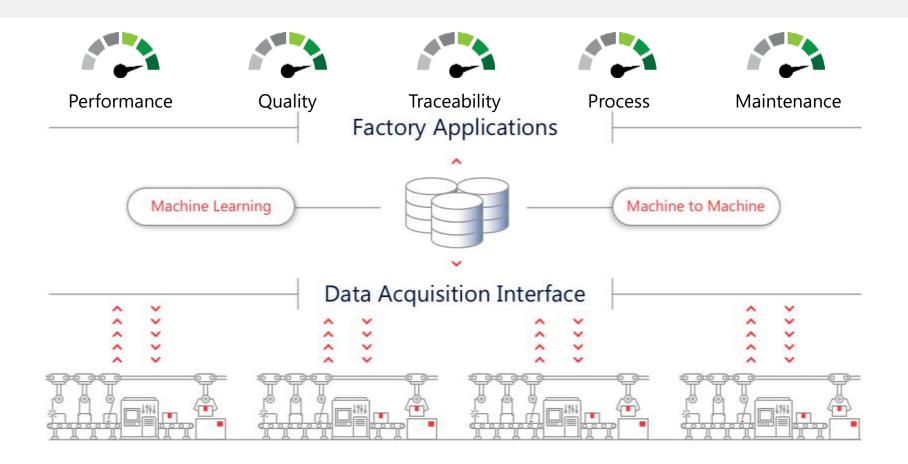
# SolarEdge Manufacturing System

- Products are designed for manufacturing and automation
- Real-time quality and testing throughout entire production lifecycle
- Digitization of manufacturing for continuous improvement
- Vertical integration of critical components
- Manufacturing close to end-customers, enabled by Copy Smart



## Real time data platform

Owning data infrastructure from all factories world-wide enables continued improvement (even when not on premisses facing COVID restrictions) including predictability of manufaturing capacity





# Sella 1 – Copy Smart facility

- Fully operational since Jan 2021
- Enables fast ramp of new products
- Global training center for contract manufacturers
- Close proximity to R&D and testbed for innovations in manufacturing
- Offers flexibility and resilience with production planning
- Replicated optimizers production line improvements in Sella 1 yielded 20% productivity increase globally



## 'Copy Smart' from Sella 1 enabled fast ramp in Mexico

### 7 months from kick-off to first shipment

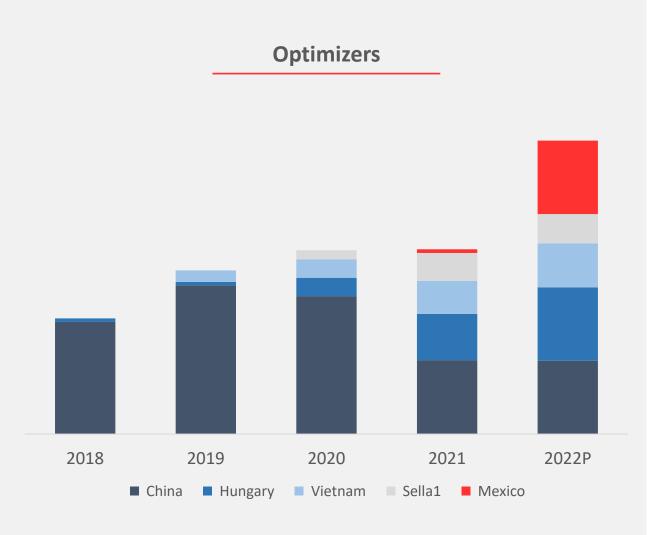


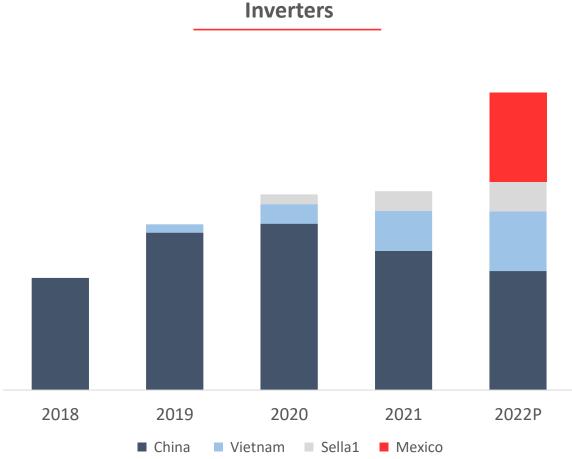






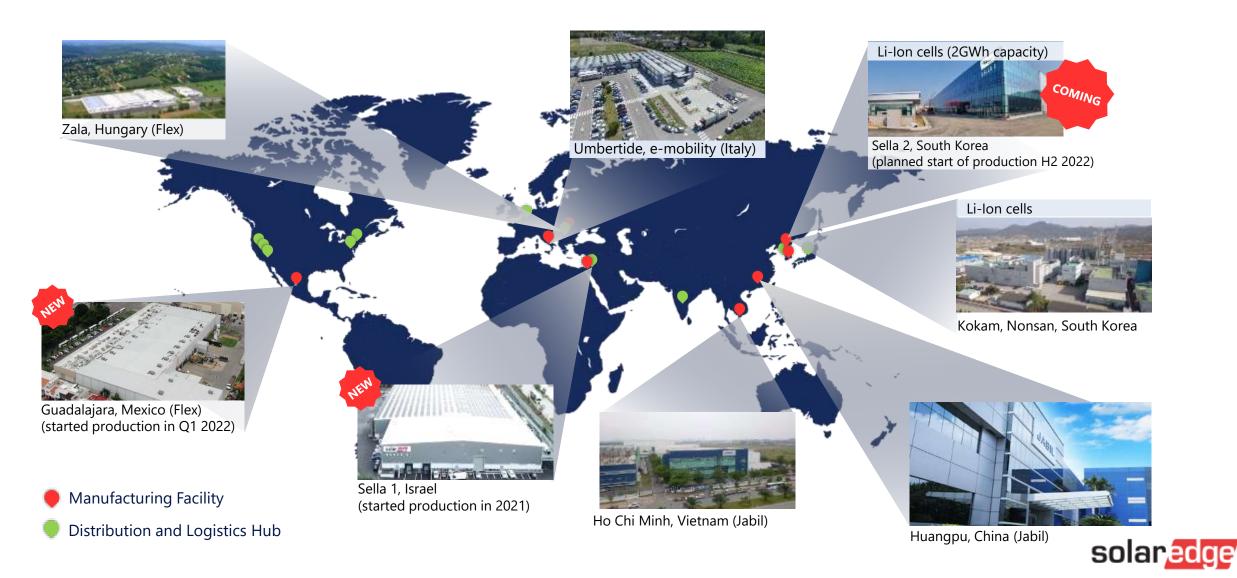
# Resilience through multi-site production







#### Logistics resilience by manufacturing close to end customers



## Supply chain resilience

- Own manufacturing of magnetics, cables, battery cells, plastic injection
- Dual sourcing of critical elements (ASIC) at tier 1 foundries
- Strategic relationships with semiconductors suppliers
- Inventory management safety stock enables resilience and smooth operation
- Localization of supply chain





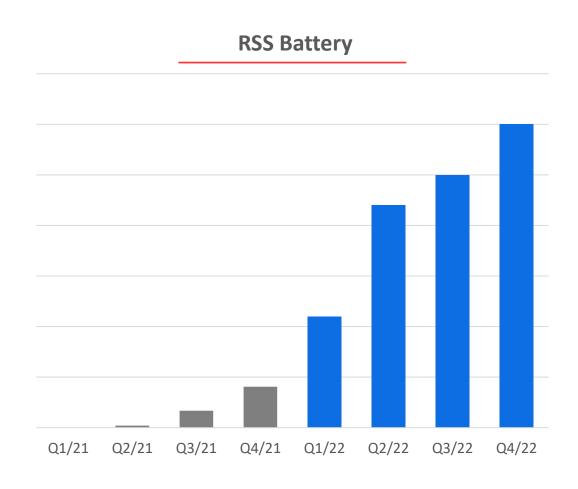






# Planned battery production in 2022

- Sella 2 cell factory machines in installation and acceptance testing
- Targeting qualification and production start in H2 2022
- Initial capacity target 2GWh per year expandable to > 3GWh with limited investment
- Built CM battery assembly factory in Hungary capable of assembling 1.2GWh batteries per year
- Full automation of cell sorting, laser welding and optical inspection throughout the process





# Key Takeaways

- Operational expertise is a key SolarEdge strength and fundamental to our future
- Our manufacturing strategy is based on 3 key pillars:
  - Ownership of the manufacturing technology stack and key parts of the supply chain,
  - Self-developed proprietary automated manufacturing
  - Copy smart and geographic proximity to key markets
- Operational performance track record and stringent manufacturing strategy enabled us to meet our sales goals capacity during challenges of Covid

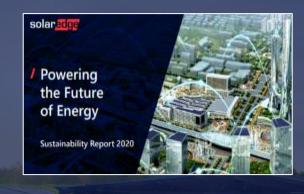




# Our Journey to ESG excellence









#### 2019

1st sustainability report (2018), non-GRI/SASB

#### 2020

- Materiality assessment
- Strategy defined
- ESG Goals set
- GRI report

#### 2021

- Supplier Code of Conduct published
- First Carbon Footprint analysis conducted
- Actively search and recruit employees from minority groups
- 2<sup>nd</sup> woman appointed to Board of Directors (25% women members)
- Improved rankings with key ESG rating companies
- GRI & SASB report



# ESG Strategy and SDG Contribution



- Accelerate affordable clean energy
- Deliver smart energy solutions
- Product Innovation
- Deliver sustainable product









- Be a responsible employer
- Protect human right
- Invest in communities











- Ethical and compliant conduct
- Climate resilience
- Resource efficiency
- Ethical sourcing





1 st



Decile rank among industry sector in ISS ESG rating; B- rating; Prime status

BBB MSCI ESG RATINGS

MSCI ESG rating (improved from BB in 2020)



## Climate change mitigation is at the core of our activities

Goal: to accelerate affordable clean energy use worldwide and contribute to climate resilience- through our products and our operations

2.5M



Target for 2025: Reach 2.5 million homes equipped with a SolarEdge PV system





As of Dec. 2021: reached 2.27 million homes

# -23M Tonne CO2e 🛞



23 million tones CO2e of GHG emissions avoided each year through use of our shipped systems



Target for 2025: Reduce 30% of our total Scope 1+2 GHG emissions per revenue (2020 base-year).









### Improve the environmental footprint of our products

- Recently completed first comprehensive carbon footprint analysis for leading modules of inverters and optimizers
- Analysis led and certified by the globally-known LCA experts, 'Carbon Trust'
- Among first companies in peer group to complete this analysis, meeting customer needs and expectations
- The analysis allows us to understand the main emission sources throughout the product lifecycle, helping our search for emission reduction opportunities









# >300 times GHG savings\*

From use of residential optimizers and inverter in ten panel PV system over 15 years, compared to the equipment's carbon footprint.

\*Based on the carbon trust certified carbon footprint values, and SolarEdge's estimated calculation of the carbon savings resulting from use of inverters and optimizers only

## Promoting gender equality in the tech sector

# Our Goal: Increasing gender equality and inclusiveness in our workforce, overcoming the inherent challenges of gender equality for the tech sector

- Recently set targets: by 2025, reach:
- **■** 38% women in Israel solar workforce (currently 30%)
- 21% women in Israel solar R&D roles; (currently 17%)
- 24% women in Israel management solar roles; (currently 18%)

#### **Steps in progress/planned for 2022**

- Women-talent development 'Boost Your Career' programs;
- Partnerships with NGOs to better locate appropriate women tech-role candidates;
- Anti-bias training
- Gender pay-gap analysis







#### Procurement & Governance

#### Responsible Procurement

- Supplier code of conduct (SCoC) published in 2021, including requirements on ethics, safety, environment, human rights, fair employment and others
- On-site ESG audits conducted at several contract manufacturer sites and major suppliers
- Responsible-sourcing confirmation required from relevant suppliers regarding potential conflict minerals

#### Advanced Governance Practices

- Variety of position statements and policies which were published during 2021
- New global trainings programs developed on ethics / code of conduct

# >100 key suppliers

Signed terms of Supplier Code of Conduct

#### 25%

Women on board of directors (and acting to further enhance diversity)







#### Safe Harbor

This presentation contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These forward looking statements include information, among other things, concerning: our possible or assumed future results of operations; future demands for solar energy solutions; business strategies; technology developments; new products and services; financing and investment plans; dividend policy; competitive position; industry and regulatory environment; general economic conditions; supply chain and logistics, potential growth opportunities; and the effects of competition. Forward-looking statements are only predictions based on our current expectations and are inherently subject to risks and uncertainties. They should not be considered guarantees of future results, which could differ materially from the results set forth in, contemplated by, or underlying this presentation.

Factors that could cause actual results to differ materially from our expectations are described in the reports filed by SolarEdge with the Securities and Exchange Commission and we encourage you to review our filings carefully, especially the sections entitled "Risk Factors" in our Annual Report Form 10K.

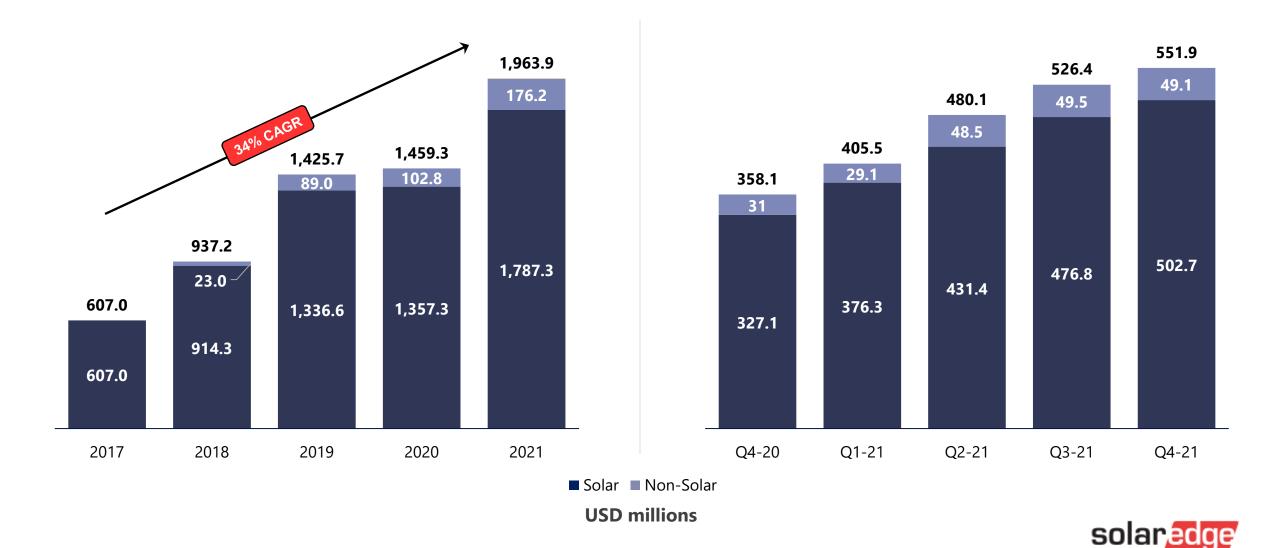
SolarEdge undertakes no duty or obligation to update any forward-looking statements contained in this presentation as a result of new information, future events or changes in its expectations.

This presentation also describes non-GAAP revenues, gross margin, operating expenses, operating income, net income and non-GAAP net diluted earnings per share, which are not measures prepared in accordance with U.S. GAAP (i.e. "Non-GAAP" measures). The Non-GAAP measures are presented in this presentation as we believe that they provide investors with a means of evaluating and understanding how SolarEdge's management evaluates the company's operating performance. These Non-GAAP measures should not be considered in isolation from, as substitutes for, or superior to financial measures prepared in accordance with U.S. GAAP.

In addition, this presentation contains market data from certain third-party sources. This information is based on industry surveys and the preparer's expertise in the industry and there can be no assurance that any such market data is accurate or that any such industry forecasts will be achieved. Although we have not independently verified the accuracy of such market data and industry forecasts, we believe that the market data is reliable and that the industry forecasts are reasonable.



# Strong revenue growth

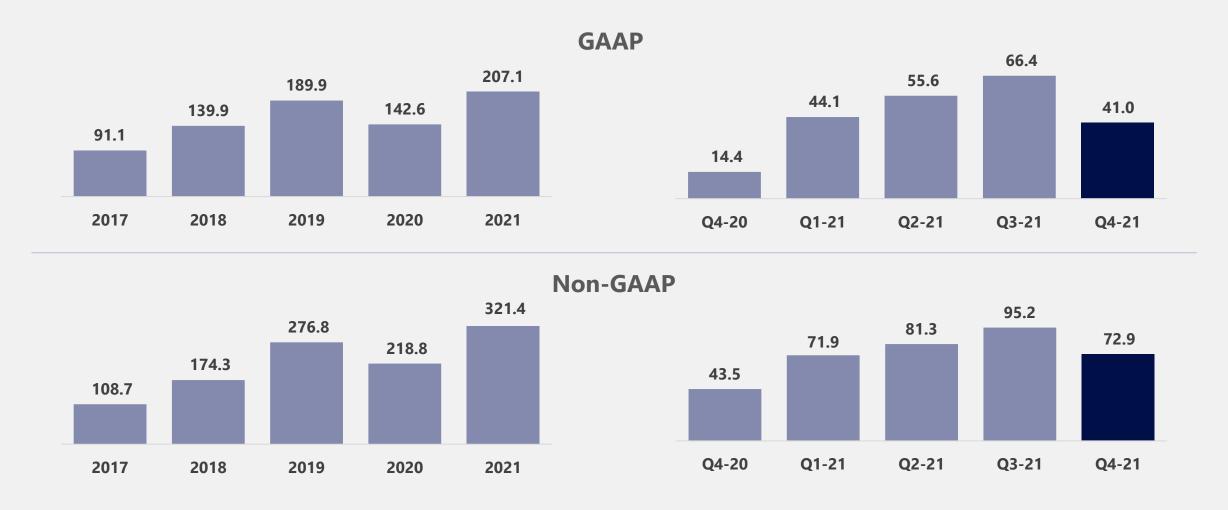


# Consolidated gross margin





# Consolidated operating profitability





## Solar business 2019 analyst day model vs. 2021 actual

YoY revenue growth	GM%	OPEX (% of revenues)	Operating Income %				
\$ @@	\$						
2019 analyst day model							
15% - 25%	36% ± 1%  ↓	13% - 15% <b>↓</b>	20% - 23%				
2021 Actual results							
31.7%	36.4%	15.8%	20.6%				



# Current margin impacts

- Rapid growth requires expedited shipments to timely meet demand
- High portion of products subject to US tariffs
- Elevated marine and air shipping costs
- Increased commodities and component prices
- Increased cost of battery materials

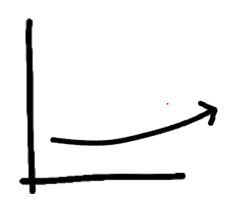




#### Future revenue streams

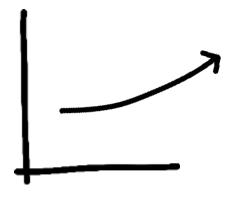
#### Scale

Scale existing product lines and businesses through market growth, share growth and new products



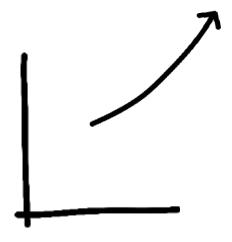
#### Develop

Develop revenue streams from technologies and ideas identified at development stage but not yet a business



#### **Explore**

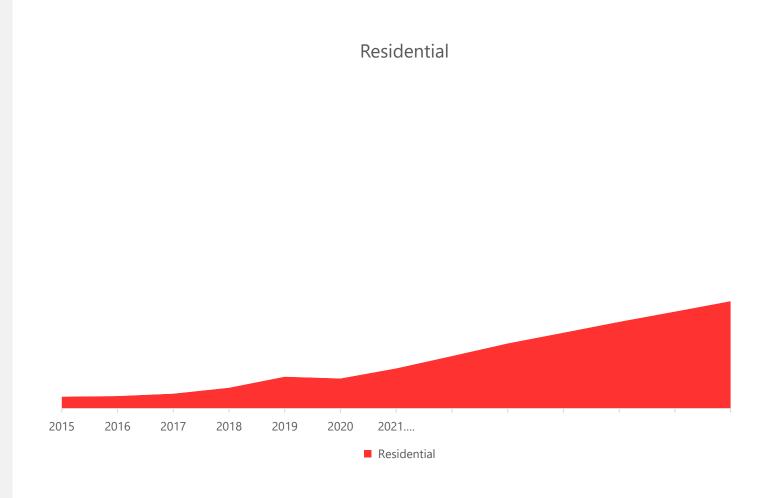
Explore new technologies, markets or business lines that are adjacent or new, on top of the existing ones





## Residential inverters and optimizers revenues

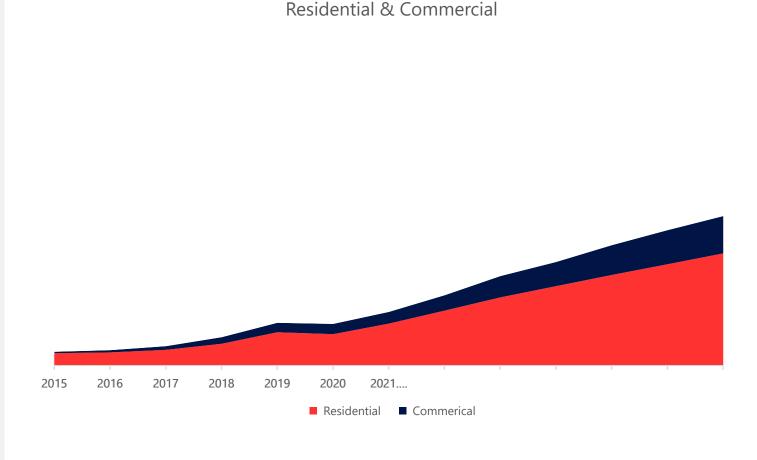
- Initiated sales in 2010
- Revenue growth expected from market growth, new products and expansion to new markets
- Highest margin profile in our portfolio that is increasing over time as a result of ASP increase due to migration towards feature rich inverters and higher capacity modules, which reduces cost per watt





## Commercial inverters and optimizers revenues

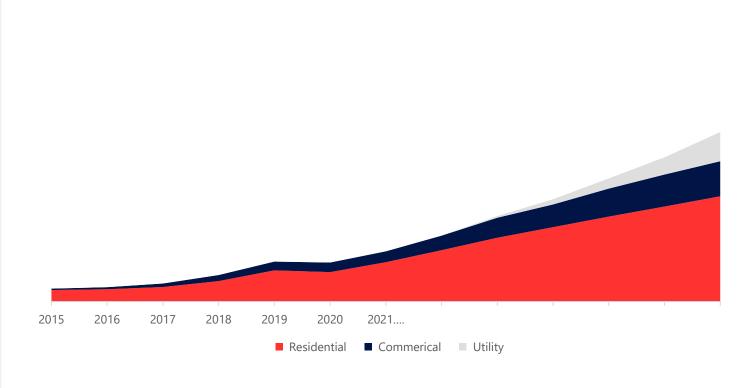
- Initiated sales in 2013
- Revenues are expected to grow due to increased installation rate in existing markets as well as expansion to new geographies and share taking
- Margin profile varies as a function of the installation size and geography and affected by competition which is all string inverters





## Utility inverters and optimizers revenues

- Meaningful utility revenues are expected to begin in early 2023 with the ramp of our 330kW inverter
- Margin profile expected to be slightly lower than the commercial inverters, and optimizers expected to improve over time as manufactured volumes increase

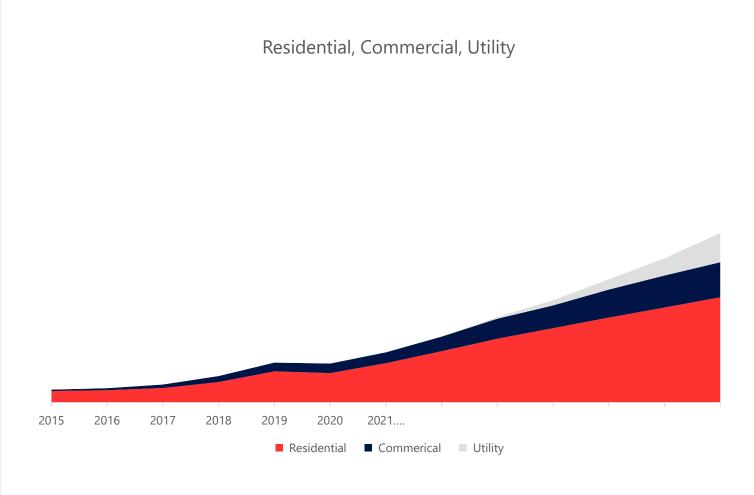


Residential, Commercial, Utility



# Inverters and optimizers revenues as a whole

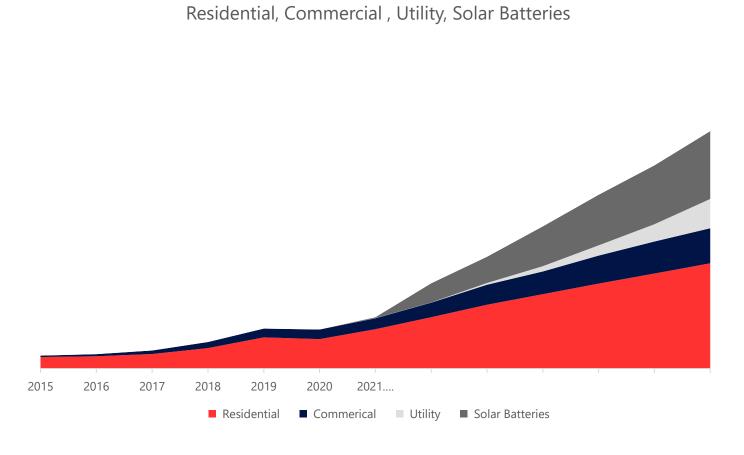
- The growing opportunity in all markets and the introduction of our utility product line is expected to continue and drive rapid revenue growth
- Blended margins for the next few years expected to remain at 35%-37% while growth of residential sales and expanding margins compensate for higher share of commercial and utility inverters, characterized with lower margins





#### PV tied batteries revenues

- Residential batteries are expected to contribute significant revenues from 2022 and on as we now have sufficient capacity of battery cells
- In the future we expect to offer C&I batteries as well, which would further boost the growth of this revenue stream
- Margins are expected to be ~25% for the entire business

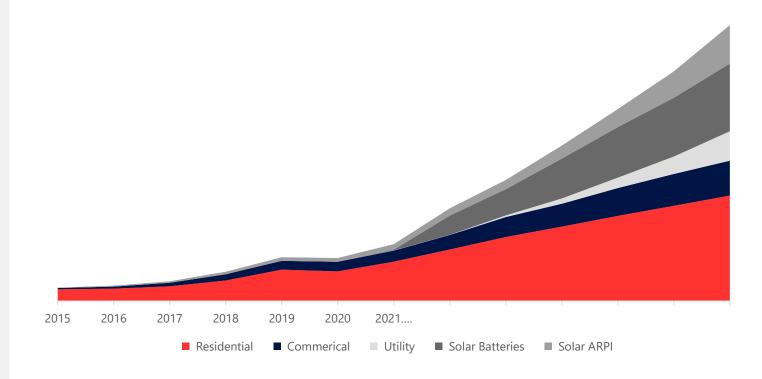




## Ancillary products (ARPI related) revenues

- Ancillary products include today EV chargers, water heaters, smart meters, smart modules and communication devices
- In the future, we will start generating revenues from our new tracker business (modeled from 2024) as well as from other devices
- Margins of these products, as a whole are expected to be above the corporate margins in the coming years. In the long term, margins are expected to reduce closer to ~30% as tracker revenues (characterized with lower margins) increase

Residential, Commercial, Utility, Solar Batteries, Solar ARPI

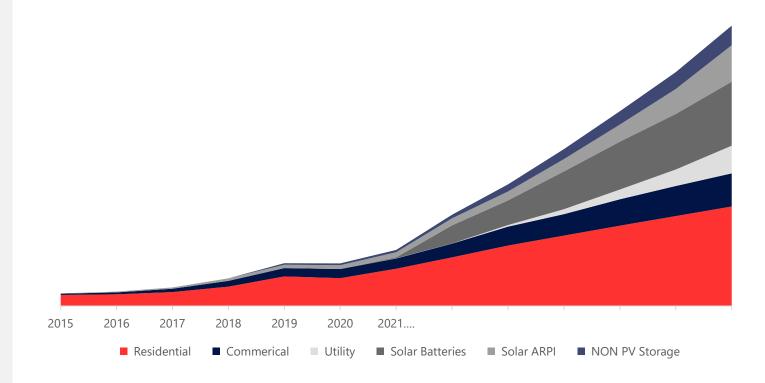




# Other storage applications revenues

- Non PV tied storage revenues are derived from various markets such as marine, EV, ESS and UPS
- This business will utilize remaining Sella 2 capacity not used for residential battery
- Blended gross margins in this business are approximately 25%

Residential, Commercial, Utility, Solar Batteries, Solar ARPI, Non PV Storage

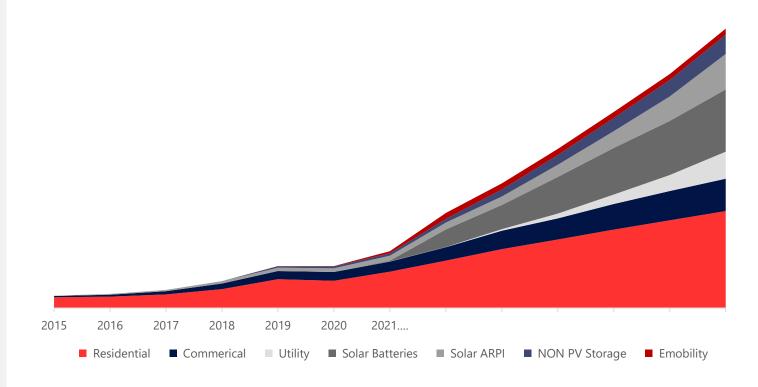




## eMobility revenues

- Long term revenues at this stage are hard to determine given the dependency on projects that are, by nature, developed over the long term
- While the opportunity is big our growth model assumes stable revenue stream from 2022 due to lack of visibility
- Margins in this segment are currently low single digits

Residential, Commercial, Utility, Solar Batteries, Solar ARPI, Non PV Storage, eMoblity





# Consolidated financial target model

	Consolidated	Solar Segment*
Revenue YoY Growth	20% - 30%	20% - 30%
Gross Margin %	29% - 31%	30% - 32%
OPEX % of Revenues	11% - 13%	10% - 12%
Operating Profit Margin %	17% - 19%	20% - 22%

<sup>\*</sup> Solar segment revenue includes inverters, optimizers, PV tied batteries and ancillary products



## Capital Expenditures

- Ongoing capital expenditures include additional manufacturing capacity at our contract manufacturers and investment in leasehold improvements in our facilities
- In addition, investments in Sella 1 and Sella 2 factories were made from 2018.

USD Millions	2020	2021	2022F
Investment in manufacturing capacity and facilities	65.5	69.9	90.5
Investment in Sella 1	31.8	9.4	3.0
Investment in Sella 2	29.5	70.0	50.0
Total	126.8	149.3	143.5

Upon completion of Sella 2 factory, we estimate similar investments in the coming years as we continue to expand our manufacturing capabilities with our contract manufacturers



## Capital Allocation

- Our capital allocation philosophy is built on the principle that shareholder value is created by increased profitability. As such the company cash will be used for the following purposes:
  - Working Capital for growth
  - Capital expenditures related to manufacturing capacity, R&D labs and facilities
  - Mergers and Acquisitions
  - Return to shareholders
- Capital sources, if required in the future, will be a combination of debt and equity in order to minimize shareholder dilution while maintaining healthy debt to equity ratio and ability to serve debt





- Consistent growth and profitability history
- Opportunity for rapid revenue growth fueled by multiple revenue streams
- Multiple products and markets changes consolidated margin profile, while segment margins expected to remain stable
- Accelerated revenue growth expected to provide operating leverage opportunity
- Capital allocation designed to support bottom line profitability and shareholder value creation



