



Why Solar Energy?

Trends, Opportunities, Careers



**Be a Clean Energy Hero
for your country!**

**How?
Solar energy**



Why do we need more solar energy installed on our buildings and in our communities?

It helps us and our planet!

Cleaner air

Cleaner Water

Climate Change Solutions





Many Students Care

Over a third says the environment is a number one concern. Multiple new reports say the climate crisis is pushing young adults to pursue more clean energy focused career paths.

- Students Expect Higher Education To Do More On Climate Change



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What we all need to know

The crucial clean energy transition is a solution that also produces jobs, better health and stronger economies.

We can use information about clean energy as:

- Consumers
- Workers
- Investors
- Community Members



Cost effective solar energy is a big part of the solution. It pays for itself in energy savings.
Solutions include:

- electric cars that use clean energy
- clean energies on the electrical grid
- buildings with energy efficiency and renewables
- reduction of the combustion of fossil fuels as quickly as possible

Good news! If we act now, we can have a stronger economy with cleaner air and water.





Remember we have a lot of solutions already. We just need to use them. And they create jobs!

Increasingly governments, businesses of all sizes and other key employers are greening their jobs, products and processes. This has helped green jobs grow at a much faster pace than other categories.

[LinkedIn's report](#) shows that demand for green skills will be continuing to grow. We need more employees educated about green products and processes.



The emerging national trend to switch to solar PV



The potential of solar PV

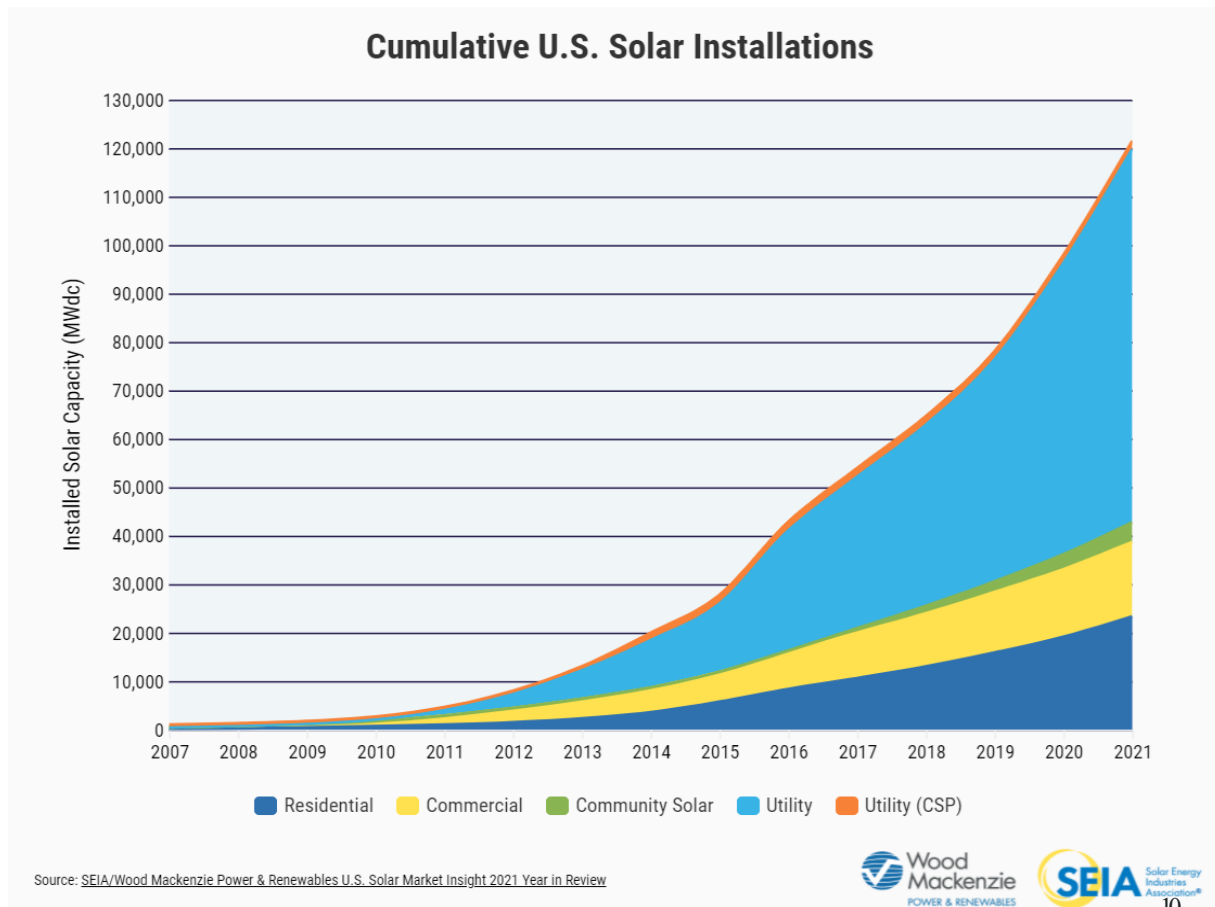
- “Enough energy from the sun hits the Earth every hour to power the planet for an entire year.” US Department of Energy (DOE)
- Increasingly renewable energies, including solar PV, have been replacing fossil fuels on the grid.





Emerging national trend to shift to solar PV

- Solar energy is growing at a rapid pace at an average annual increase of 33%.





Solar is competitive now with natural gas, oil and other fuels. This means:

- More customer demand and more jobs!
- Solar PV is more accessible to more people, further outcompeting fossil fuels and replacing
- Companies hiring the solar workforce have been experiencing difficulty finding enough people with the right skills in recent years, especially diverse workers



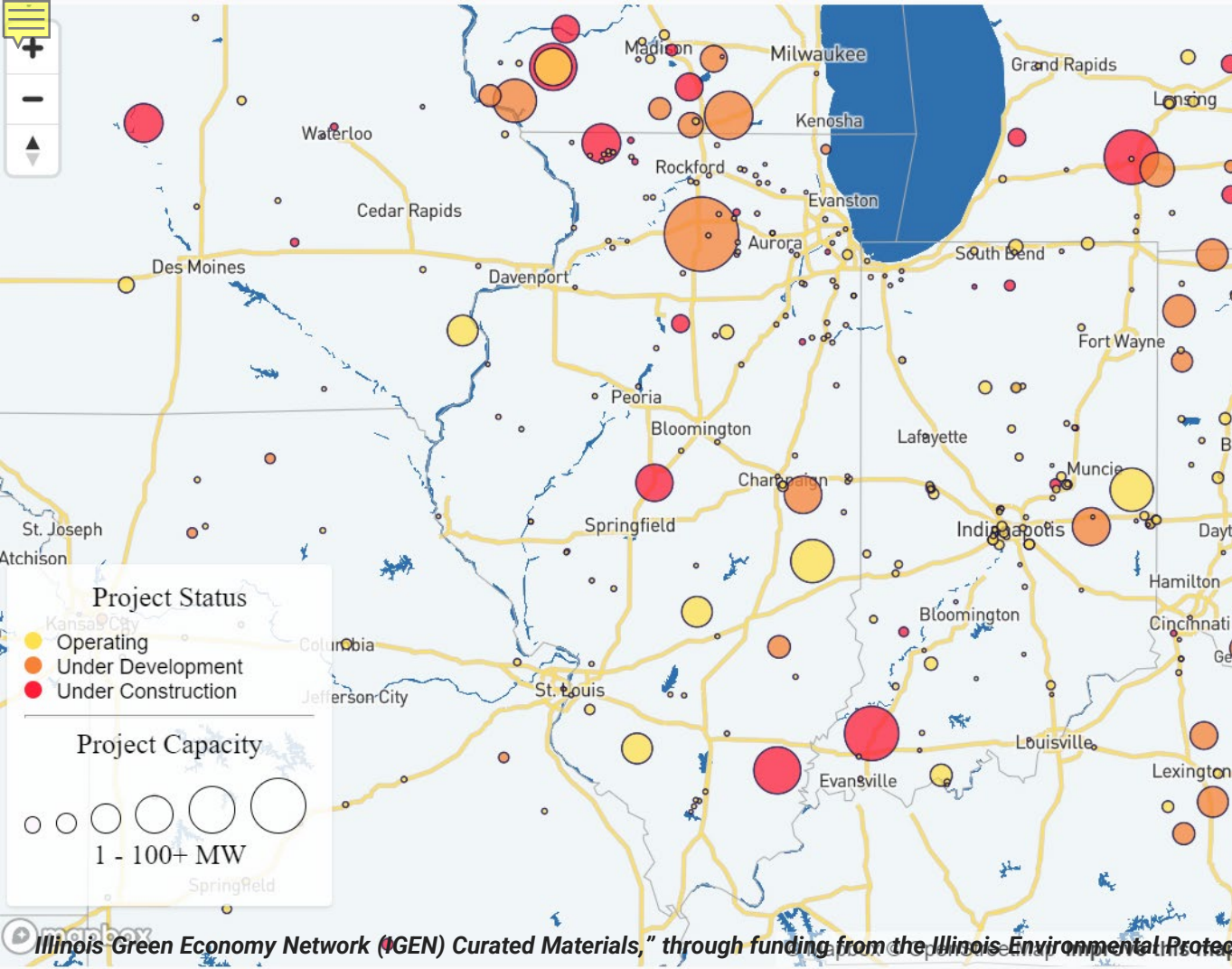


Solar PV in Illinois

- Illinois had enough installed solar PV capacity (as of Q4 2021) to power 176,379 homes with a prediction to triple capacity over the next 5 years

- Currently, 298 solar companies operate in Illinois.
 - 61 manufacturing companies
 - 96 installers/developers
 - 141 others
 - The solar industry has invested over \$2.03 billion in Illinois, with \$818.15 million of that added in 2020





From the Solar Energy Industries Association’s “Major Solar Projects List” Project Location Map on April 30, 2022.

See <https://www.seia.org/research-resources/major-solar-projects-list> for updated map





Green Jobs

Clean energy heroes are
in demand!

Massive Workforce Is Needed. Quickly growing job opportunities for:

- New employees
- Existing workers and owners
- Where? In businesses, community based organizations, and government





The top 2 fastest growing jobs are in wind and solar.

If it is not in your area yet, it will be soon.



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Fastest Growing Occupations

PRINTER-FRIENDLY

Fastest growing occupations: 20 occupations with the highest percent change of employment between 2018-28.

Click on an occupation name to see the full occupational profile.

| OCCUPATION | GROWTH RATE, 2018-28 | 2018 MEDIAN PAY |
|--|----------------------|-------------------|
| Solar photovoltaic installers | 63% | \$42,680 per year |
| Wind turbine service technicians | 57% | \$54,370 per year |
| Home health aides | 37% | \$24,200 per year |
| Personal care aides | 36% | \$24,020 per year |
| Occupational therapy assistants | 33% | \$60,220 per year |

It's exciting to be a clean energy hero:

Transportation

- Electric vehicles
- Cars, trucks, fleets

Building Design, Construction and Operations for Net Zero Emissions

- More energy efficiency
- Electrification of buildings including their heating systems
- Solar, wind and other clean energies (on-site or from the grid)
- Smart controls and energy storage

Other

- New products in all areas
- Embedded energy and circular economy



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Image source:
[Cleanenergyjobs.org](#)

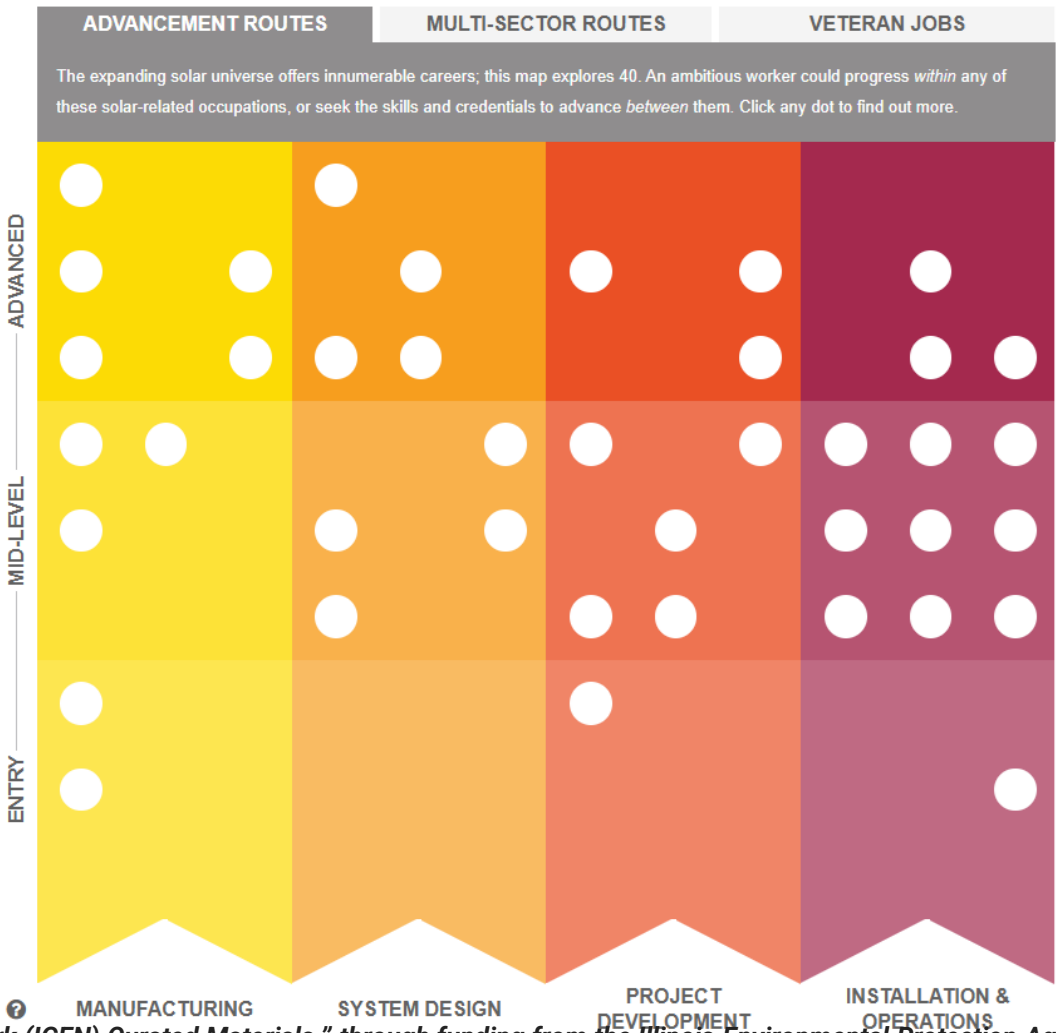


Some example careers in solar

- Design
- Installation and Troubleshooting
- Sales
- Project management
- Open a new division of the company
- Retail business owner
- Distribution/Wholesale
- Manufacturing



- MANUFACTURING +
- SYSTEM DESIGN +
- PROJECT DEVELOPMENT +
- INSTALLATION & OPERATIONS x
- Solar Instructor
- Solar Installation Contractor
- Solar Fleet Manager
- Electrician with Solar Expertise
- Solar PV Technician (commercial/utility)
- Solar Project Manager
- Solar Service Technician (residential)
- Solar PV Installer
- HVAC Technician with Solar Expertise
- Plumber with Solar Expertise
- Roofer with Solar Expertise
- Solar Crew Chief
- Solar Assembler / Basic Installer



Solar Career Map

from the US-based Interstate Renewable Energy Council (IREC)

irecsolarcareermap.org



Career Pathways

Want to explore careers in the solar electricity industry? Click on each of the dots in this [solar careers map](#). This map and its accompanying resources is brought to you by experts in the field to understand what you could do, the competencies for each job role, and more about the solar industry.





Why else do people choose to work in solar?

There are many additional reasons:

1. It feels great to help reduce pollution and care for the human and planetary health each day.
2. The jobs cannot be outsourced (lost to other countries).
3. The jobs are growing some of the fastest growing areas in the country (actually, in the world)!
4. You can be an energy hero for your country!
5. This is not only important for you for your career, but it also positively impacts your community! You truly are a HERO!





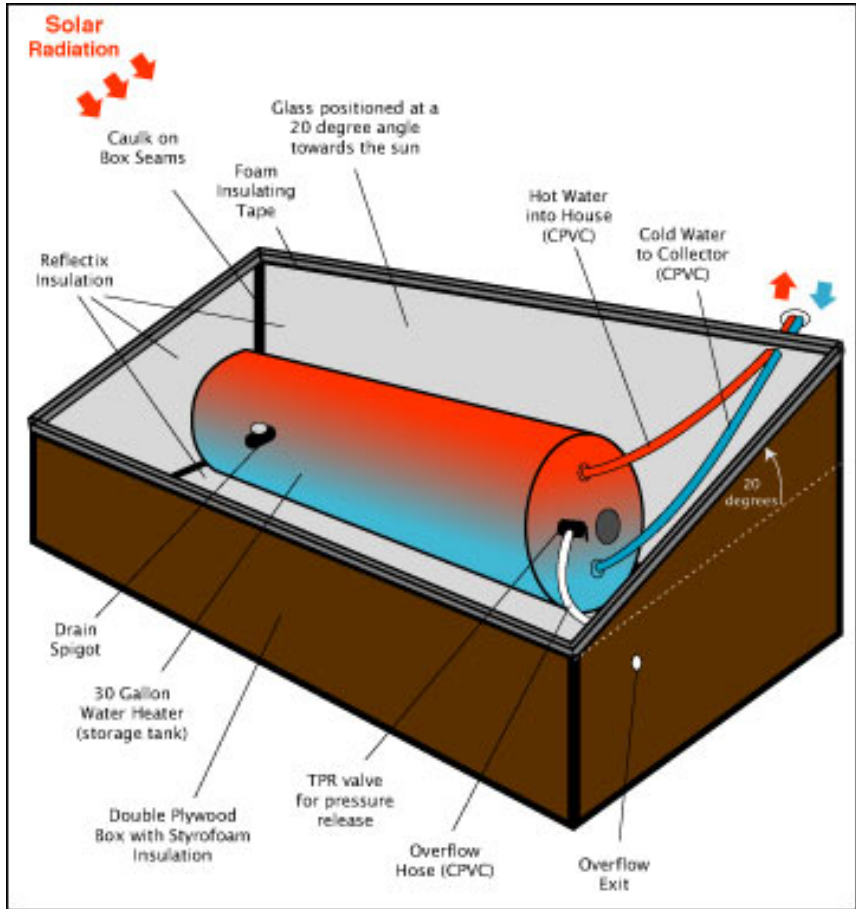
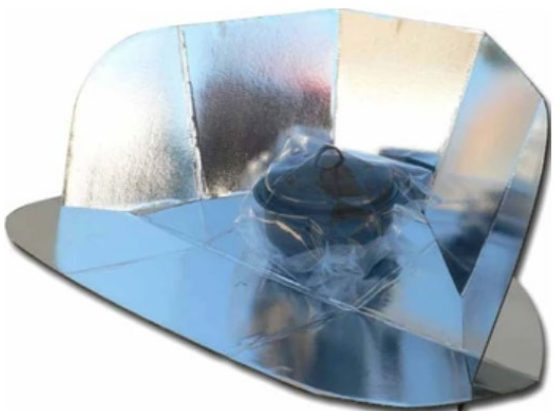
You can be a Clean Energy Hero!





There are other ways to use solar:

- Solar Cooking
- Solar Water Heating
- Solar Water Purification



Solar Uses from the National Renewable Energy Lab (NREL)

Photovoltaic Applications

At NREL, we see potential for photovoltaics (PV) everywhere. As we pursue advanced materials and next-generation technologies, we are enabling PV across a range of applications and locations.



Solar Farms

Many acres of PV panels can provide utility-scale power—from tens of megawatts to more than a gigawatt of electricity. These large systems, using fixed or sun-tracking panels, feed power into municipal or regional grids.



Remote Locations

It is not always cost-effective, convenient, or even possible to extend power lines to locations where electricity is needed. PV can be the solution—for rural homes, villages in developing nations, lighthouses, offshore oil platforms, desalination plants, and remote health clinics.

<https://www.nrel.gov/pv/applications.html>



Stand-Alone Power

In urban or remote areas, PV can power stand-alone devices, tools, and meters. PV can meet the need for electricity for parking meters, temporary traffic signs, emergency phones, radio transmitters, water irrigation pumps, stream-flow gauges, remote guard posts, lighting for roadways, and more.



Power in Space

From the beginning, PV has been a primary power source for Earth-orbiting satellites. High-efficiency PV has supplied power for ventures such as the International Space Station and surface rovers on the Moon and Mars, and it will continue to be an integral part of space and planetary exploration.



Building-Related Needs

In buildings, PV panels mounted on roofs or ground can supply electricity. PV material can also be integrated into a building's structure as windows, roof tiles, or cladding to serve a dual purpose. In addition, awnings and parking structures can be covered with PV to provide shading and power.

<https://www.nrel.gov/pv/applications.html>



Military Uses

Lightweight, flexible thin-film PV can serve applications in which portability or ruggedness are critical. Soldiers can carry lightweight PV for charging electronic equipment in the field or at remote bases.



Transportation

PV can provide auxiliary power for vehicles such as cars and boats. Automobile sunroofs can include PV for onboard power needs or trickle-charging batteries. Lightweight PV can also conform to the shape of airplane wings to help power high-altitude aircraft.



Conclusions re: Jobs and Future Directions of Solar PV

- Don't wait to get into the field – Solar PV technologies are already efficient and cost-effective, competing and excelling in lowering costs compared with all fossil fuels (coal, oil, natural gas)
- Solar is much better for the environment and climate in terms of climate change change and other pollution issues





Family and individual benefits to switching/using solar PV

1. Reduce your dependence on the utility company
2. Reduce your pollution
3. Increase your energy independence
4. Contribute to a healthier environment and the Clean Energy Transition





Benefits to Society

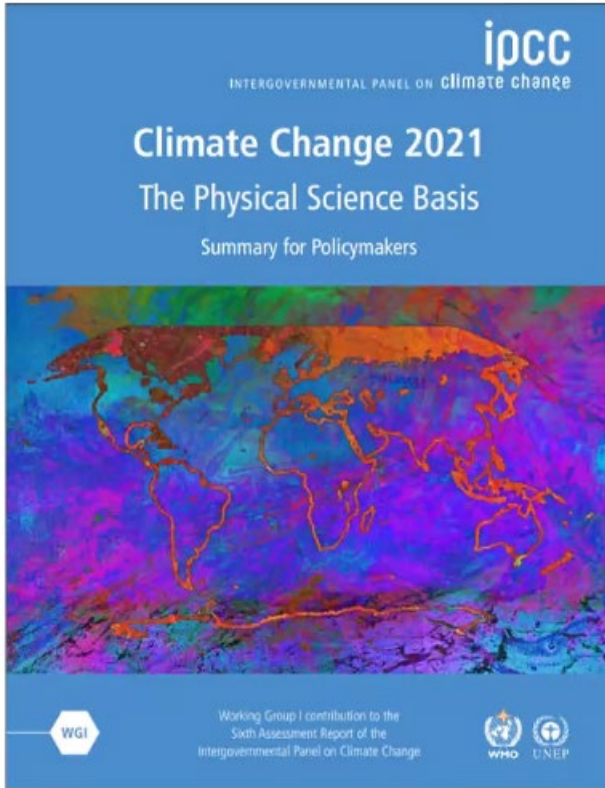


Benefits from the clean energy transition. As a Solar Energy Hero, you can:

- Create safer and healthier ecosystems!
- Protect our clean air and clean water!
- Produce healthier communities!
- Reduce toxins within our buildings for our families health and comfort!
- Decrease greenhouse gases and reduce climate change!
- Have a career as a Clean Energy Hero!



Be part of the exciting transition to
Solar Electricity!



We Have A Code Red for Humanity Bigger Crisis than COVID

- [IPCC Sixth Assessment Report](#) - Find all reports [here](#)
- We need to change now.
- If we do not, we “will miss a brief and rapidly closing window of opportunity” for a globally livable future.

We are not on track to stabilize the climate. Humans need to:

- Reduce fossil fuel combustion (coal, oil and natural gas)
- Switch to efficient and much cleaner fuels like solar and wind energies that will better protect our air, water and our climate.

Climate Change Paths of Destruction

- Stronger and more catastrophic weather
 - Damaging **winds**
 - Major **flooding**
- More severe **wildfires**
- **Droughts** affecting communities and agriculture
- **Poor health** related human impacts



Image Source: USATODAY



Climate Change Hurts our Economy

In just **two years**, the U.S. federal government has **paid out over \$220 billion in home insurance claims** resulting from wildfires, severe storms, and other natural disasters – **more than the previous 20 years combined.**

Source: [BuilderOnline](#)

Studies about the risk of climate instability show many negative impacts:



The climate crisis haunts Chicago's future. **A Battle Between a Great City and a Great Lake**

By DAN EGAN
JULY 7, 2021 Photographs By
LYNDON FRENCH

Massive human suffering - over 3 billion lives are at risk. 80% of the planet's population have already been impacted.

Climate Change's Deadly Combination: Heat and Humidity - Princeton Study - [Source](#)