

Tuesday, September 15 // 12 PM ET



# LIVING AND DRIVING ON SUNSHINE:

## ELECTRIC VEHICLES AND HOME SOLAR STORIES

In Partnership with:

[cleanenergy.org](https://cleanenergy.org)   
Southern Alliance for  
Clean Energy



ELECTRIFY THE SOUTH

 **SOLAR UNITED  
NEIGHBORS**



# HOSTS



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# Who is Solar United Neighbors?

- National 501(c)3 nonprofit
- Began in 2007
- Leading solar education and outreach organization
- Community of 110,000 solar supporters across the country expanding energy democracy





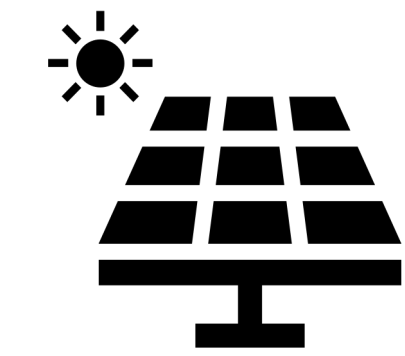
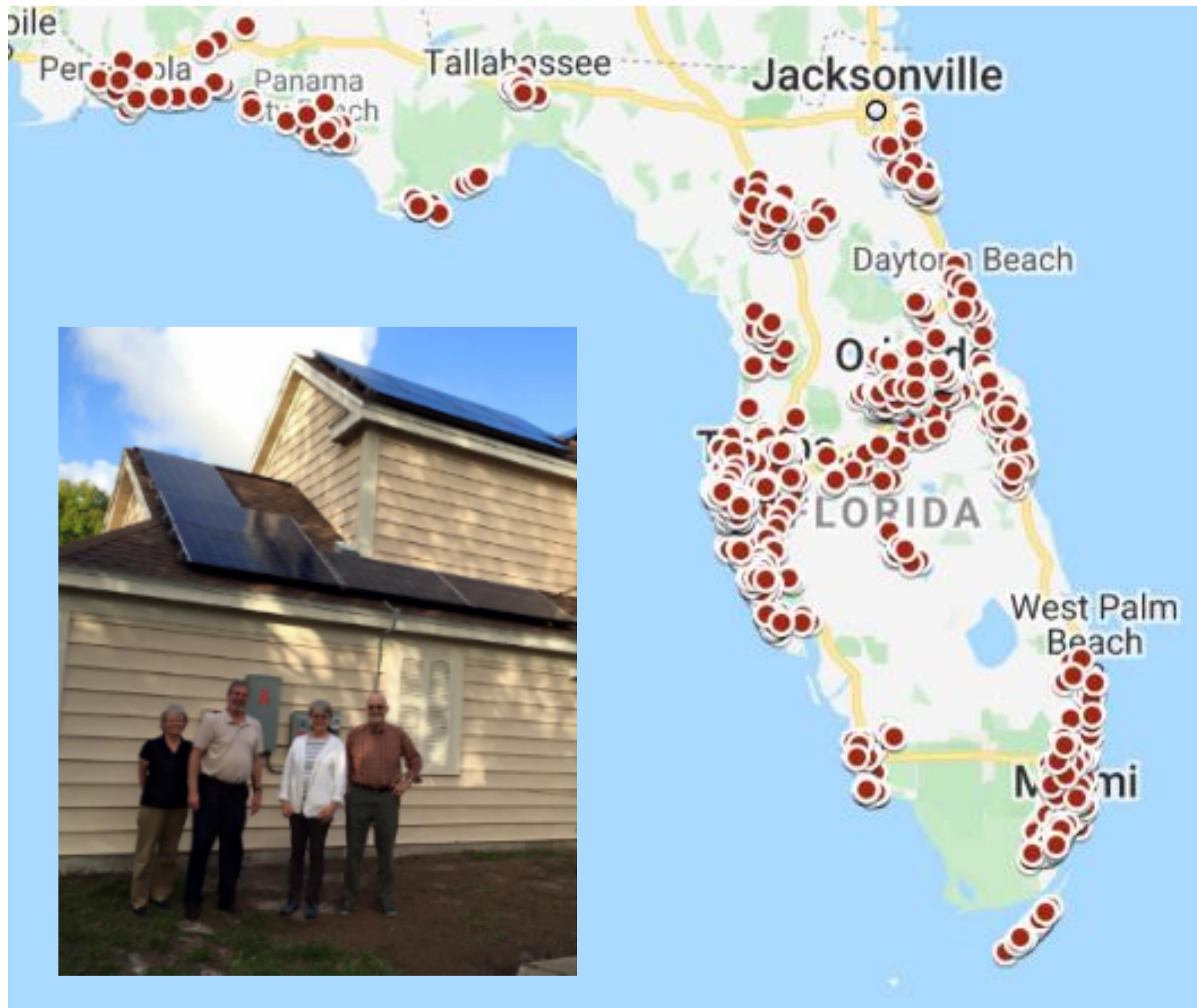
# Solar United Neighbors



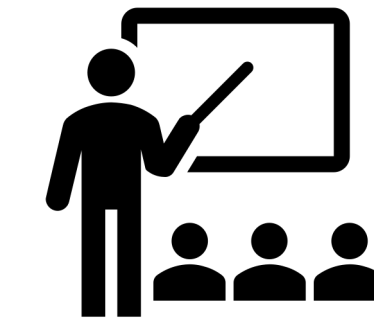
We envision a clean,  
equitable  
energy system that  
directs control and  
benefits back to local  
communities, with  
solar on every roof  
and money in every  
pocket.



# Solar United Neighbors of Florida



58 co-ops



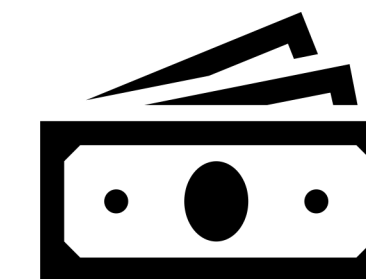
12,940+  
educated



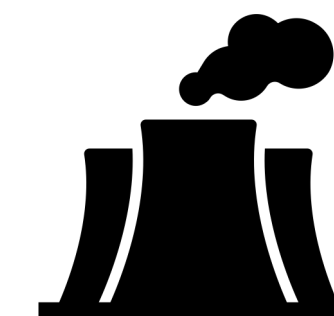
17 MW  
installed



1762 solar  
homes



\$37.8 million invested in local economy



569.5 million lbs of CO<sub>2</sub>e offset

**FLORIDA's**  
impact is expanding solar in the Sunshine State

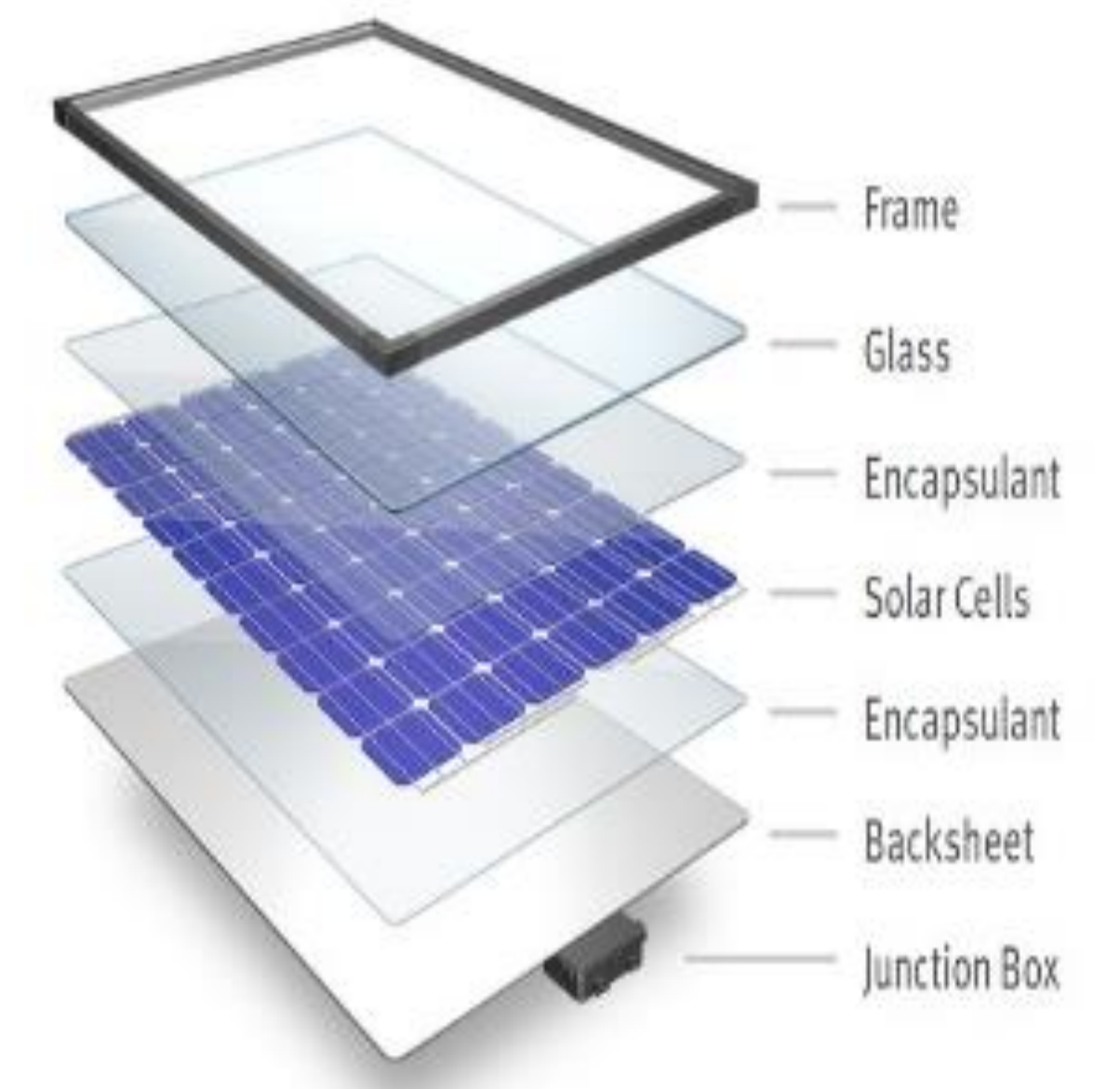


# Solar Power



## Solar Photovoltaic (PV)

Converts solar energy to electricity

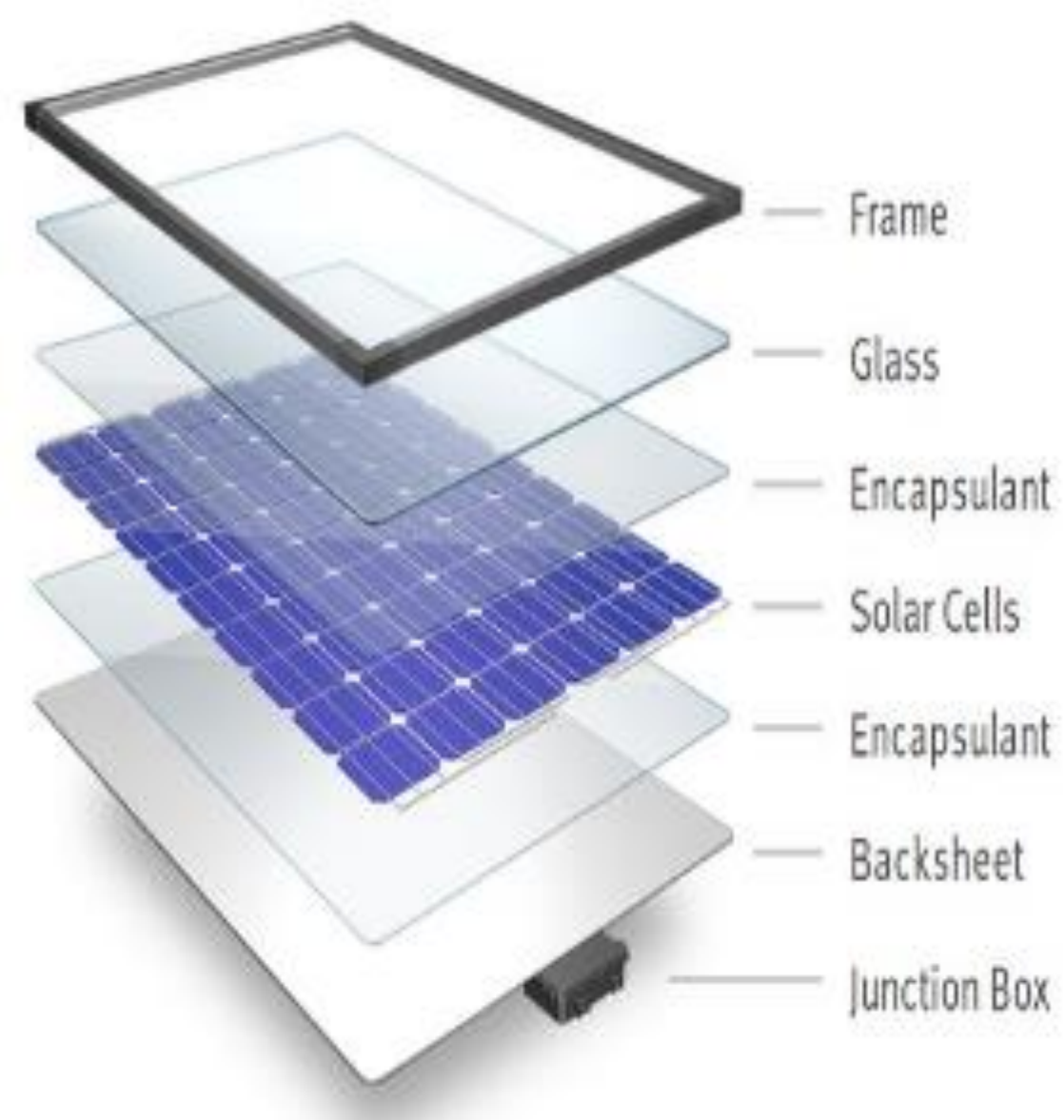


## Panel / Module

*Image Source: DuPont*



# System Components: Panels, Arrays, Inverters

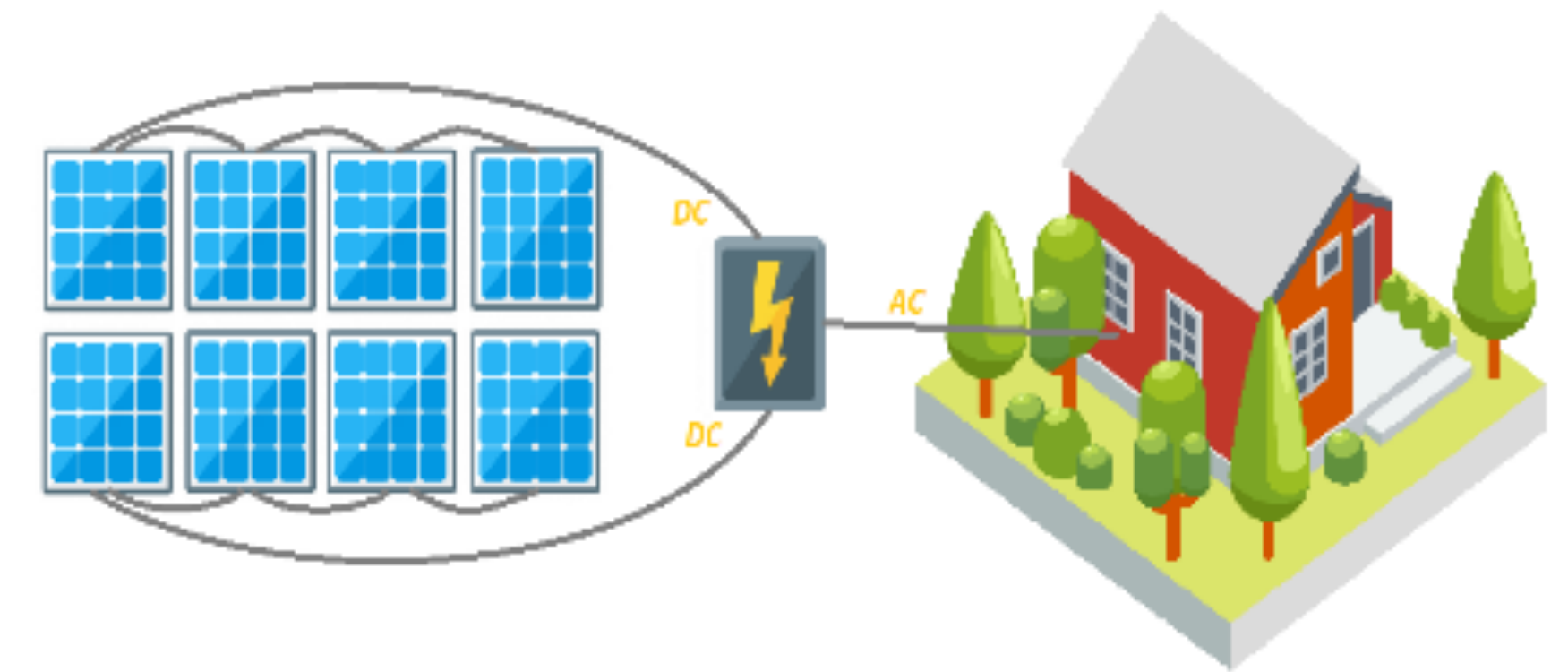


**Panel / Module**

*Image Source: DuPont*



**Solar Array**



**Inverters**



# System Components: Racking, Electrical Panel, Bidirectional meter







## HOW SOLAR WORKS



1

Solar  
Array

2

Solar  
Inverter

3

Electrical  
Panel

4

Utility  
Meter



# Net Metering

## What is NET METERING?

Allows flow of electricity to AND from customer.

1kWh produced = 1kWh consumed

When you generate more than use, extra electricity flows back through meter and you receive a credit on your power bill for that excess production. That credit can rollover month to month. At the end of the year, any surplus energy is purchased at wholesale rate.

There are some times when solar panels **generate more energy** than you need at home



With net metering, that extra energy is **put to good use ...**



serving nearby customers' **electricity needs**



These credits ultimately **reduce** your electric bill ...





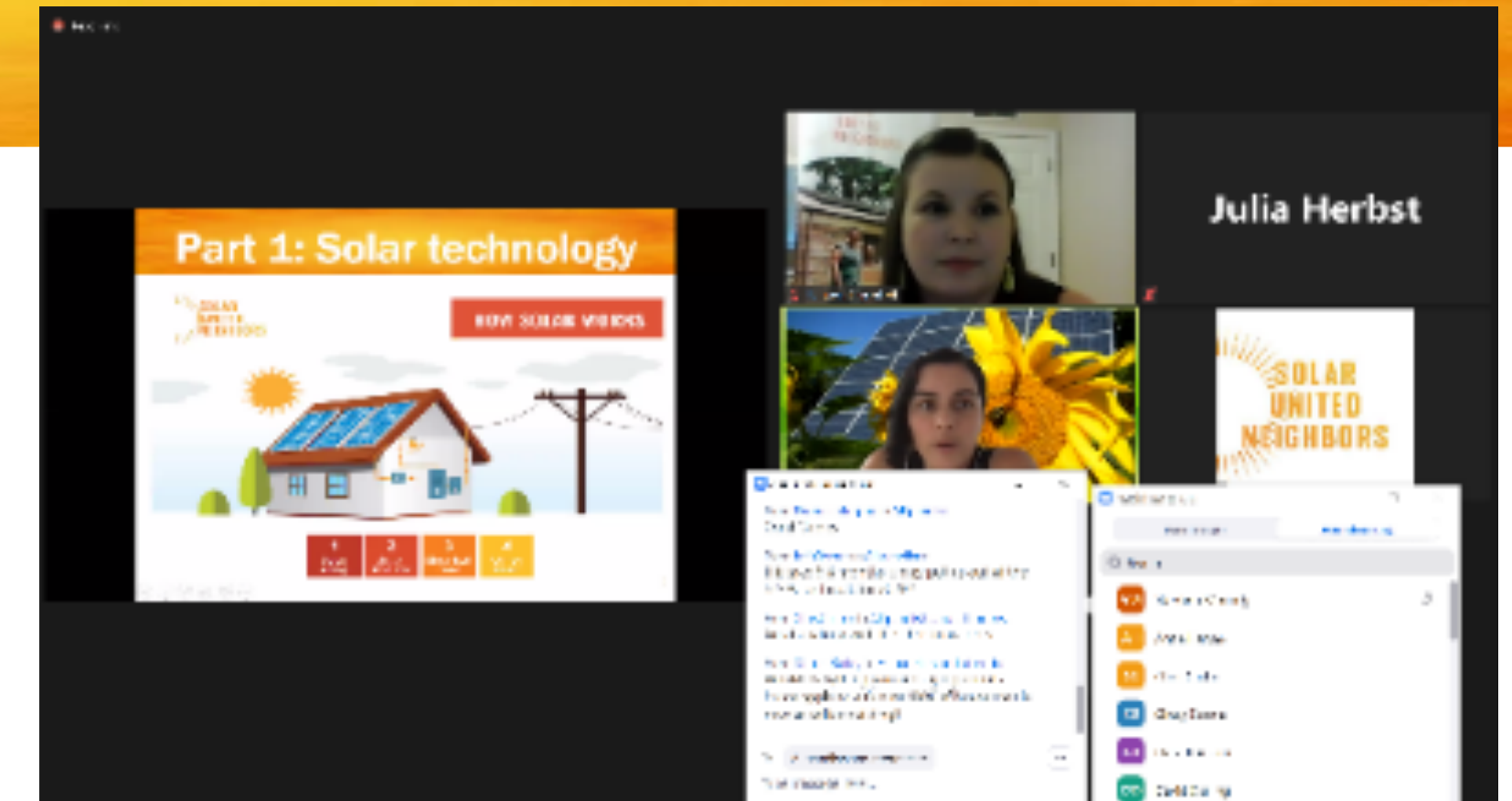
# What's a solar co-op?

- Group of neighbors go solar together
- Group selects single solar company to install for group
- Leverage power of bulk purchasing to get a discount on a quality system
- Get support from Solar United Neighbors of Florida throughout the process





# What's a solar co-op?



- Support from local organizations & municipalities
- Free interactive information sessions
- Installer Selection Committee by co-op members
- Support through the installation and beyond





# Why go solar with the co-op?

## Solar co-op benefits

- Get best value on installation and support throughout the process
- Connect with fellow solar enthusiasts
- Become part of the growing solar movement

Now Open:

[www.solarunitedneighbors.org/co-ops/](http://www.solarunitedneighbors.org/co-ops/)



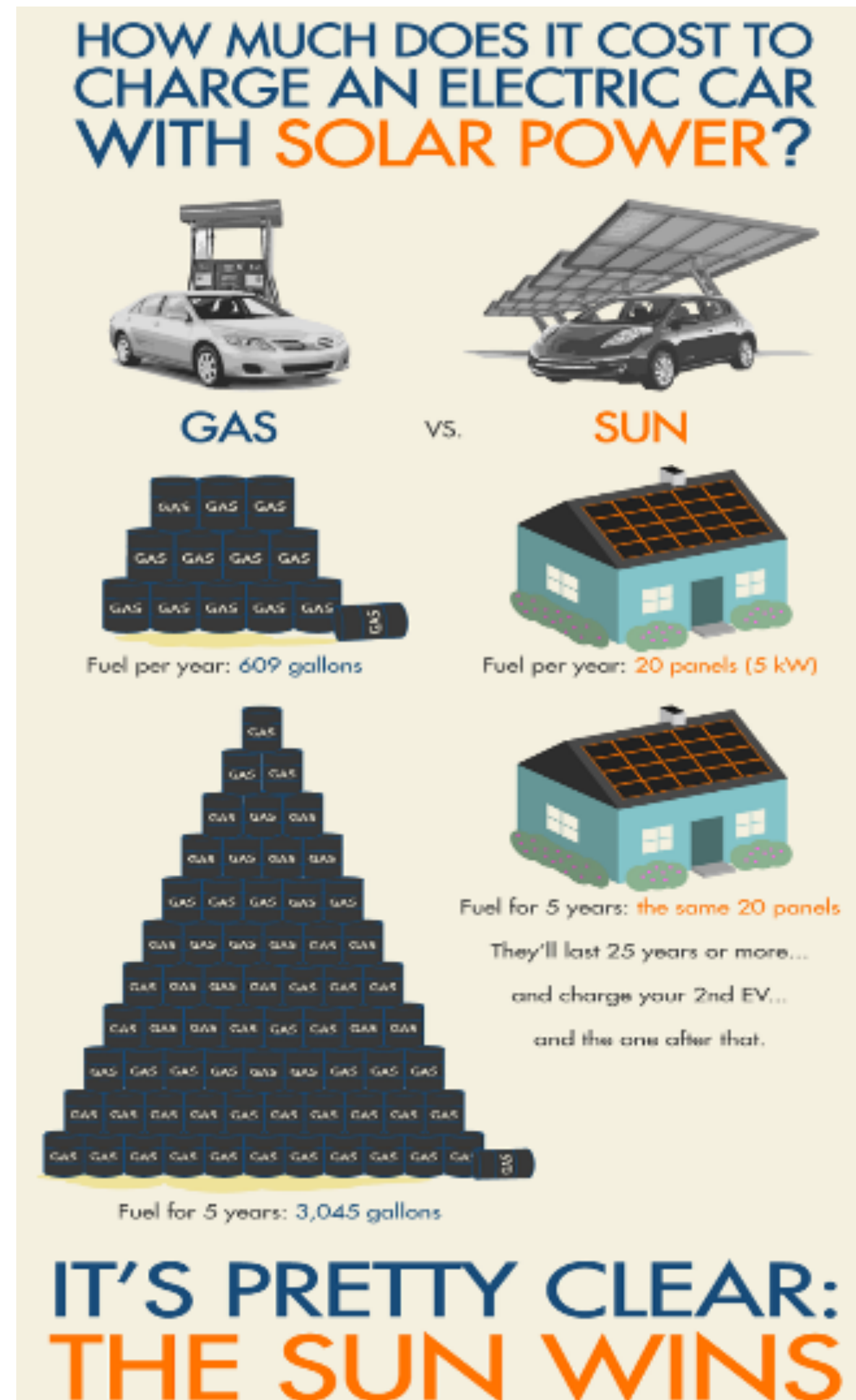
- [Broward County Solar Co-op](#)
- [Florida Keys Solar Co-op](#)
- [Hillsborough 2020 Solar Co-op](#)
- [Lake County Solar Co-op](#)
- [Miami-Dade Solar Co-op](#)
- [Sarasota County Solar Co-op](#)

- Go Solar Membership – Proposal review & support  
[solarunitedneighbors.org/membership](http://solarunitedneighbors.org/membership)





# PV for your EV Solar = Local Florida Fuel





# Sizing solar for an electric vehicle



**How much solar do you need to power your electric vehicle (EV) with the sun?**

## *How much do you drive in a year?*

Solar United Neighbors has created a simple, conservative estimate for homeowners considering combining EVs with rooftop solar. Your exact numbers may vary.

Miles driven annually	Solar capacity needed**
4,100	1 kW
8,200	2 kW
12,300	3 kW
16,400	4 kW
20,500	5 kW
24,600	6 kW

\*\*Calculated using 3.5 miles per kWh, 15% AC to DC conversion loss for charging, and a solar production factor of 1.4. See opposite side for details on how to calculate.



# Sizing solar for an electric vehicle



***Similar to miles per gallon in gas-powered cars, the energy required to drive an EV can be measured in miles per kilowatt-hour (kWh). Kilowatt-hours are how electrical energy is measured. Follow the steps below to estimate the size of a solar system you will need to power your electric vehicle.***

- 1) Determine how many miles you travel each year in your EV.
- 2) Determine how many miles your car travels per kWh. Visit: <https://www.fueleconomy.gov/feg/alternatives.shtml>.
- 3) Determine the amount of energy in kWhs you will need to power your vehicle for the miles you drive annually.
  - a) Divide number of miles you drive annually per the miles your EV travels per kWh. Example: **13,000 annual miles/3.5 miles per kWh = 3,714 kWhs** (your EV may differ).
  - b) Factor in AC- DC conversion losses for charging (typically 10-15%).
- 4) Work with your installer or visit [NREL PV Watts](#) to determine the amount of solar capacity needed at your site to produce the kWhs for your EV.
- 5) Add the additional solar capacity needed for your EV to your total system size.

**Want to learn more? Visit: [SolarUnitedNeighbors.org/EVs](https://SolarUnitedNeighbors.org/EVs)**



# PV for your EV? Or an EV for your PV?



**When you drive an EV and go solar, charging is on the house. Really.**



# SOUTHERN ALLIANCE FOR CLEAN ENERGY



The Southern Alliance for Clean Energy (SACE) is a regional membership organization that promotes responsible energy choices to ensure clean, safe, and healthy communities throughout the Southeast.





# ELECTRIFY THE SOUTH


[HOME](#)
[DRIVING ELECTRIC](#)
[RESOURCES](#)
[TAKE ACTION](#)
[POLICY](#)
[REPORTS](#)
[TEST DRIVE AN EV](#)
[PROTECT OUR COAST: DRIVE ELECTRIC](#)

## WE'RE GOING ELECTRIC!

Electrify the South is a campaign of the Southern Alliance for Clean Energy to educate and empower individuals, communities, municipalities, policymakers, and utilities to transition to clean, electric transportation throughout the Southeast.





# WHY ELECTRIC VEHICLES (EVs)?

The transportation sector is now the [largest source](#) of carbon dioxide (CO<sub>2</sub>) pollution in the United States



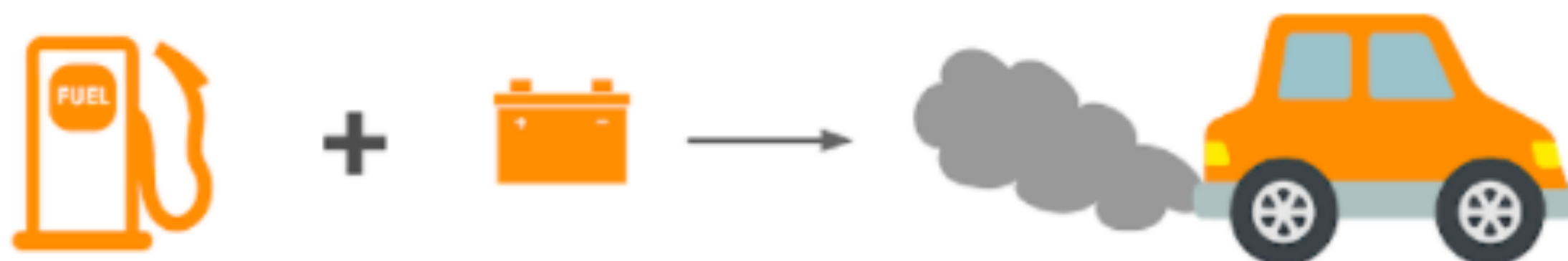


# WHAT IS AN EV?

INTERNAL COMBUSTION ENGINE ElectrifyTheSouth.org



HYBRID



PLUG-IN HYBRID ELECTRIC VEHICLE



ELECTRIC VEHICLE





# WHY GO ELECTRIC?

**EVs save money** – low fuel and maintenance costs

**EVs save time** – no more gas stations or oil changes

**EVs protect human health, the environment and our coasts**

**EVs are a superior driving experience**



# LOWER FUEL COSTS AND STABILITY

It costs about 10 cents per mile to drive a gas-powered car if your car gets 23 mpg and gas is \$2.25  
It costs about 3.5 cents per mile to drive electric and about a penny per mile with rooftop solar  
[UC Davis Electric Vehicle Explorer](#) tool for calculating annual vehicle energy costs

Model	Cost per mile (cents)	1,000 miles cost (dollars)
Gasoline	10	\$200
Electric	3.5	\$35
Electric from Solar	1	\$10

\*Assuming \$2.50 cost per gallon of gasoline and 25mpg  
Assuming 33.7kW/h= 1 gallon and \$.12/kWh and 115mpg



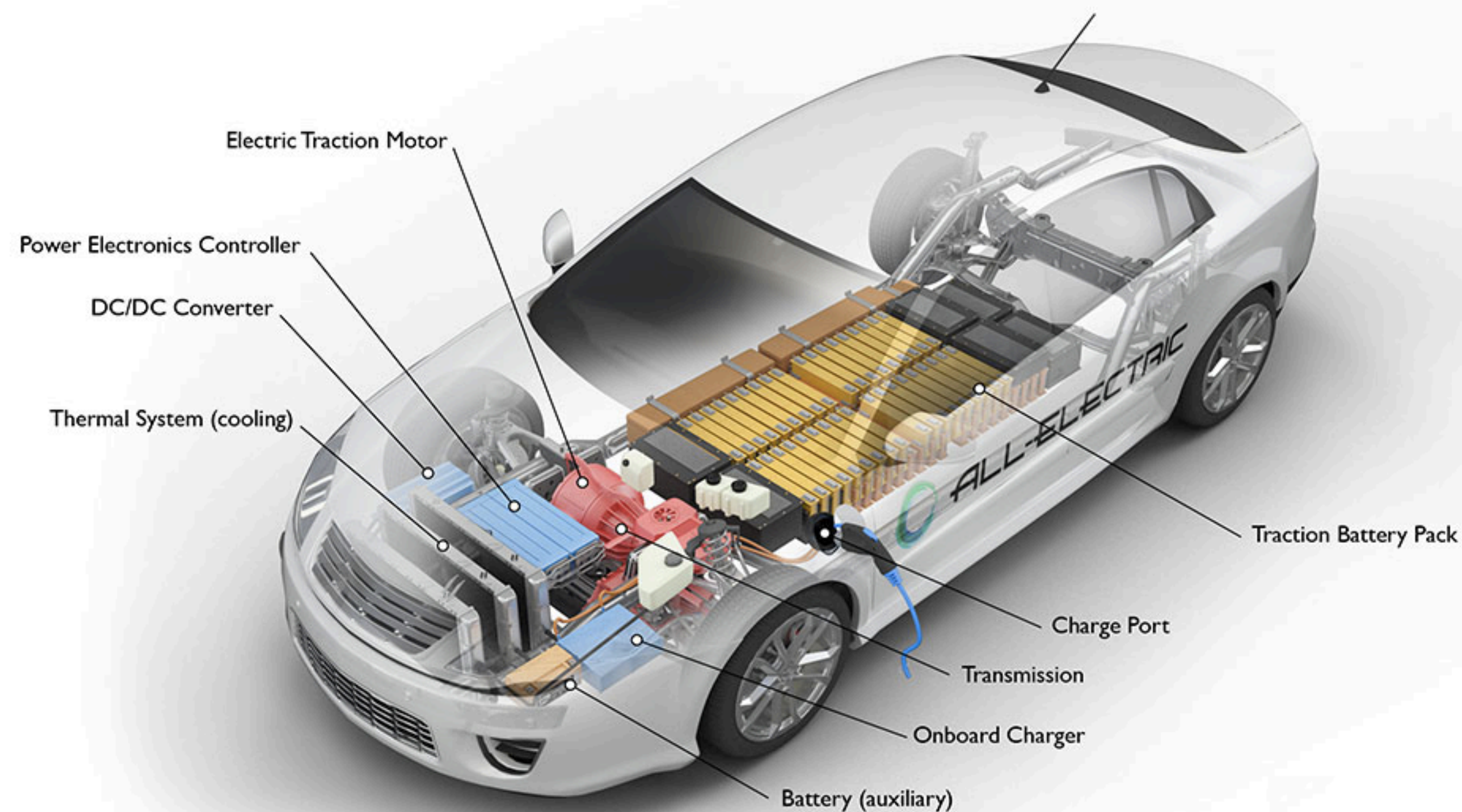
# LOWER MAINTENANCE, LOWER COSTS

EVs require less maintenance than traditional Internal Combustible Engine (ICE vehicles)

Additionally, time spent and maintenance cost are reduced

Fewer moving parts

All-Electric Vehicle



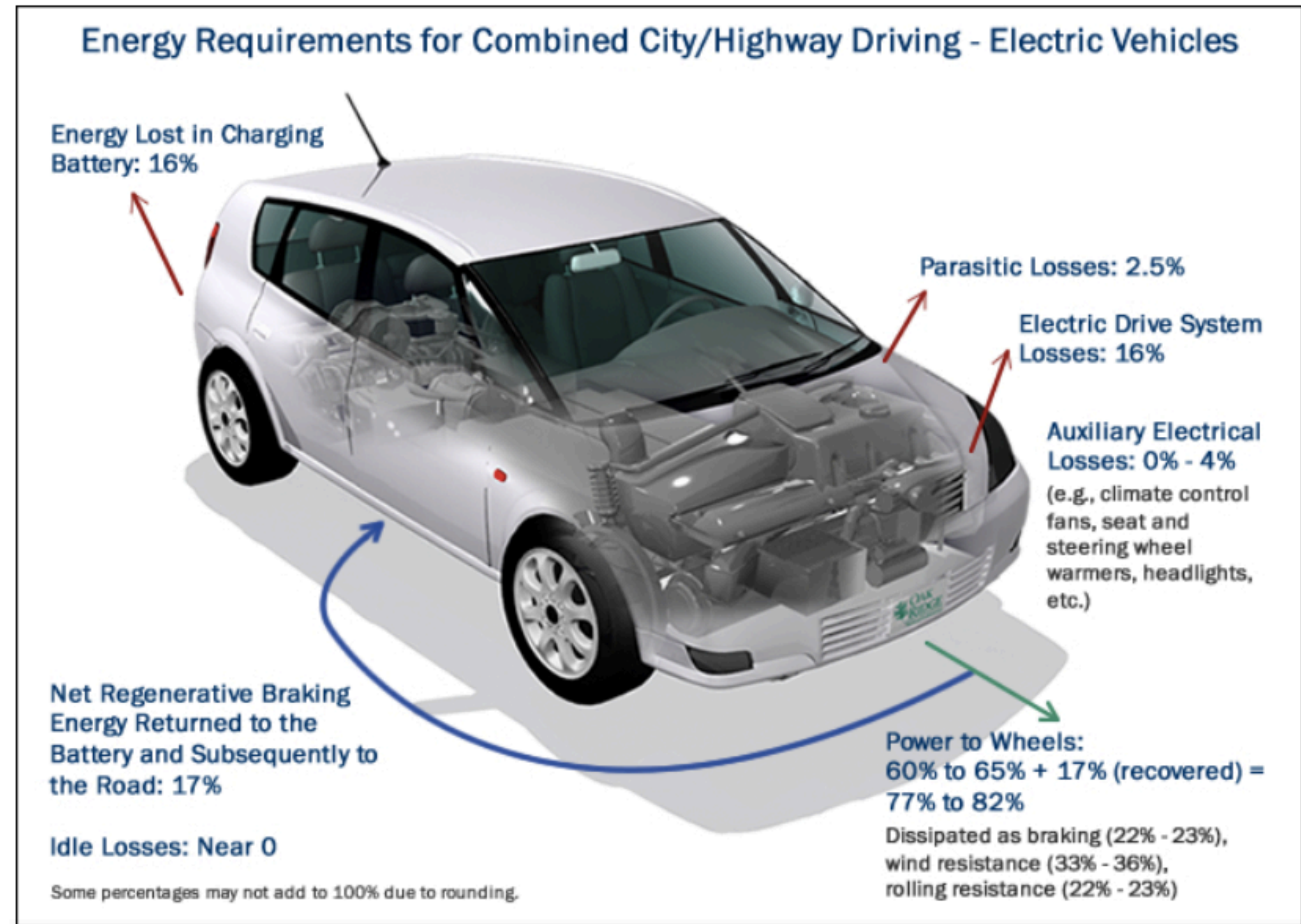
afdc.energy.gov












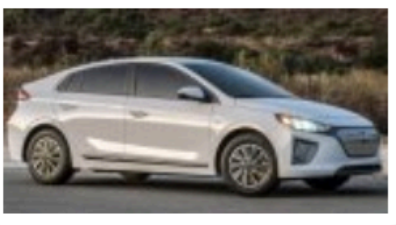







# A SUPERIOR DRIVING EXPERIENCE

They're more efficient





# A SUPERIOR DRIVING EXPERIENCE

Vehicle	EPA Fuel Economy ↓	Driver MPG	Annual Fuel Cost
<input type="checkbox"/> 2020 Tesla Model 3 Standard Range Plus Automatic (A1), Electricity			
 	 <b>141</b> MPGe combined city hwy 24 kWh/100 mi	NA	\$450
<input type="checkbox"/> 2019 Hyundai Ioniq Electric Automatic (A1), Electricity			
 	 <b>136</b> MPGe combined city hwy 25 kWh/100 mi	NA	\$500
<input type="checkbox"/> 2020 Hyundai Ioniq Electric Automatic (A1), Electricity			
 	 <b>133</b> MPGe combined city hwy 25 kWh/100 mi	NA	\$500
<input type="checkbox"/> 2019 Tesla Model 3 Standard Range Plus Automatic (A1), Electricity			
 	 <b>133</b> MPGe combined city hwy 25 kWh/100 mi	NA	\$500
<input type="checkbox"/> 2020 Tesla Model 3 Standard Range Automatic (A1), Electricity			
 	 <b>131</b> MPGe combined city hwy 26 kWh/100 mi	NA	\$500
<input type="checkbox"/> 2019 Tesla Model 3 Standard Range Automatic (A1), Electricity			

The average fuel efficiency in the US is 25.1 miles per gallon

The fuel efficiency for most electric cars is over 100 MPGe







# A SUPERIOR DRIVING EXPERIENCE

Electric vehicles are fun to drive

The [quickest car in the world](#) is a Tesla Model S

Superior technology

Powering them is convenient (they can be recharged at scheduled times overnight)

They are quiet





# CHARGING YOUR EV

- Level 1 Charging 110V (~1.4kW)
- 2-5 miles per hour



J1772 charge port





# CHARGING YOUR EV

- Level 2 Charging 220V (7-19kW)
- 20-30 miles per hour



J1772 charge port





# CHARGING YOUR EV

- Level 3 Charging or DC Fast Charging (50- 350kW)
- Up to 80% battery capacity per half hour



J1772  
combo



CHAdeMO





# CHARGING YOUR EV

## Tesla Charging

- Level 1
- Level 2
- Supercharging



Tesla  
combo












# EVS COMING TO MARKET

Figure 1A

Manufacturer Commitments: Model Announcements, Investments, and Sales Forecasts

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
						\$15.5 billion for electric mobility, digitization and AI		20 electrified models					
								800,000 EVs annually (1/3 total sales)					
		500,000 e-vehicles		5 BEV models				All model have electrified version					
								25 electrified models (at least 12 BEVs)					
								15-25% of sales are electric					
													
													

Green – Model announcements  
 Orange – Investments (converted to USD\$) or acquisitions  
 Blue – EV sales forecast




\_\_\_\_\_

[illegible]



# AVAILABLE MODELS

<https://plugstar.com/>



Shopping Assistant **Cars** ▾ Incentives ▾ Charging ▾ Events ▾ Dealers ▾ Login ▾

Browse Electric Cars

Vehicle Tiles

Range vs. Cost

Sort by: Make ▾ | Price ▾ | Electric Range ▾ | Popularity ▾

Clear filters - See all cars

42 vehicles displayed

Cash Loan **Lease**

Budget after incentives, in zip **34688**

< \$1,400/mo. ▾

Vehicle type ▾

☒ Sedan

☒ Hatchback

☒ Coupe

☒ Crossover

☒ Minivan


☒ SUV

☒ Wagon

☒ Truck

MINI

Cooper S E Hardtop  
2 Door Electric



\$3,325


Due at Signing


est. \$227 /month

Lease Payment

110 miles


electric

☒ 



Nissan

LEAF



\$3,133


Due at Signing


est. \$246 /month

Lease Payment

149 miles


electric

☒ 



Honda

Clarity Plug-In  
Hybrid



\$3,280

Due at Signing

est. \$267 /month


Lease Payment


48 miles

electric

340 miles

total

☒ 



Click heart icons to select cars



# TAX CREDITS AND REBATES



- Federal EV Tax Credit up to \$7,500 for vehicles  
<https://afdc.energy.gov/laws/409>
- Federal Tax Credit for EV charging station  
<https://afdc.energy.gov/laws/10513>
- Utilities have rebates  
[https://afdc.energy.gov/laws/state\\_summary?state=fl](https://afdc.energy.gov/laws/state_summary?state=fl)



# QUESTIONS + STAY CONNECTED



@ElectrifyTheSouth



ElectrifyTheSouth.org

Newsletter, electric vehicle actions, EV blogs for new and established drivers, and more!



# EV/PV OWNERS

**Charlie Behrens**

<https://bit.ly/EVPower>



**Carol Marks**



**Mary Blackwell**

