Electric Vehicles and Solar Panels FAQs

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ELECRIC VEHICLES (EV)

Are EVs more harmful on the environment than gasoline cars?

While electric vehicles have higher greenhouse gas emissions associated with the initial creation of the vehicle, they will have an overall reduced carbon footprint for the life of the vehicle. This is partly due to the efficiencies of the motors, the fact that EVs have no tailpipe emissions, and improvements in the power grid. EVs can be powered by renewable resources such as wind, hydro, or solar, rather than coal or natural gas. According to APS, by 2030, their goal is to source 45% of their power from renewable sources.

Electric vehicles often emit less carbon dioxide during operation when it's powered by the electric grid vs. gasoline. For example, a gasoline powered 2021 Chevy Spark driving 12,000 miles in a year would emit 3.5 metric tons of CO_2e. The electric battery powered 2021 Chevy Spark would emit 1.3 metric tons over the same distance traveled. In 2018, those battery powered emissions would have been 1.56 metric tons. The overall electric grid in the southwest has become cleaner as APS and other utilities have increased the use of renewable sources, decreasing greenhouse gas emissions from approximately 1,027 LBs of CO_2e per megawatt-hour in 2018 to 850 LBs in 2020.

These emissions would be found at electricity generating plants that currently power our homes and businesses, as there are no tailpipe emissions for the electric vehicle. Even in 2018 the electric battery powered cars would emit less greenhouse gas emissions than the internal combustion engines while in operation, while improving local air quality and reducing noise pollution. As APS and the electric grid become cleaner and more renewable energy is found powering homes charging these vehicles, greenhouse emissions will continue to decline when compared to gas engines.

EVs can't handle my daily commute, right?

Actually, the typical household drives on average 50 miles a day, and with most EVs being able to travel 200 miles on a charge, commuting with an EV should not be a problem.

What is the City of Sedona's Green Fleet and why does it matter?

The City has a fleet of vehicles that are used for our Police Department, Public Works and Community Development teams, and other staff members who need to travel in vehicles for their job. As vehicles turn over, the City would like to convert the use of gas-powered vehicles to electric powered vehicles, to create a Green Fleet. The purpose of this fleet is to reduce GHG emissions from City fleet vehicles, which in 2021 was an estimated to be 16% of Municipal emissions.

Additional facts include:

- Beyond the Green Fleet of vehicles, the City will make efforts to electrify other equipment, such as leaf blowers, lawn mowers, etc.
- The Green Fleet initiative falls under the Climate Action Plan as one way the City can help contribute to reducing Sedona's carbon emissions by 50% by 2030 and to transition all municipal City fleet vehicles to 100% zero emission vehicles by 2030.
- As of September 2022, there is 1 EV passenger car, 1 EV motorcycle and 6 hybrid vehicles in the City's Green Fleet.
- The City is investigating a fleet of electric bicycles to decrease municipal greenhouse gas emissions and improve community emissions. The electric bikes would aim to help reduce the use of gas-powered vehicles while providing an alternative transportation option for City employees to improve employee well-being, exercise, and connections.

Why is it taking so long to convert all the City's vehicle fleet to electric?

The Green Fleet Policy was adopted in November of 2021. Since then, there have been supply chain constraints, cost increases, and lack of available models. The City is working on an implementation roadmap to help align with vehicle retention replacement schedules within City departments.

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Where can I charge an EV battery?

Most EVs can be charged using a standard 120V outlet. Additionally:

- There are over 45,000 charging stations available nationally.
- Additional charging stations may be found at various private businesses within the Verde Valley.

Current City of Sedona EV Charging Stations

City Hall: 102 Road Runner Drive
Installation via APS Take Charge Program (at no cost to City)
Who Controls the Chargers? ChargePoint
Who Controls the Pricing? City of Sedona
Current Pricing to Customer: $0.12/kWh, parking stall costs are free for first 4 hours then $0.75/hr after that
Type of Charger: Level 2

Uptown: 401 Jordan Road
Installation by City of Sedona - purchased and installed at a discounted rate that was negotiated by ASU
Who Controls the Chargers? ChargePoint
Who Controls the Pricing? City of Sedona
Current Pricing Costs to Customer: Free to Charge, free parking stall costs
Type of Charger: Level 2

Posse Grounds Park
Installation via Electrify America (at no cost to City)
Who Controls the Chargers? Electrify America
Who Controls the Pricing? Electrify America
Current Pricing: $0.43/kWh
Type of Charger: DC Fast Charger

Sunset Park: (Spring 2023)
Installation via APS Take Charge Program (at no cost to City)
Who Controls the Chargers? ChargePoint
Who Controls the Pricing? City of Sedona
Current Pricing: $0.12/kWh, parking stall costs are free for first 4 hours then $0.75/hr after that
Type of Charging: Level 2

*All electricity supplied by APS

SOLAR PANELS

I've heard that over the lifecycle of having solar panels, after accounting for the manufacturing and finally disposal, that solar panels are worse for the environment because they can't be recycled than ever having them in the first place. Can this be confirmed?

Solar panels can be recycled and reused. If they are to be disposed of, the regulations for disposing them are guided by the EPA's Resource Conservation and Recovery Act.

Additionally, during the operational life of the solar panel, it is not emitting sulfur dioxides, mercury, and nitrous oxides, and other heavy metals daily unlike coal and natural gas fired energy, resulting in lower exposure to elements that cause cancer, asthma, and other diseases. The manufacturing and mining of materials do pose some environmental concerns, but those same concerns are also there for natural gas, coal, even nuclear, but have far fewer concerns when in operation.

Learn more about EPA Solar Disposal and about renewable energy.

Consider the following positives to solar energy:

- Solar energy is one of the most clean and sustainable sources of energy.
- Panels can last an average lifespan of 25 years.
- Solar is the fastest growing energy source which is vital to reduce fossil fuel use.

- Solar panels should be safely disposed of or recycled under the regulations of the Resource Conservation and Recovery Act.
- Solar energy generated 3% of U.S. electricity in 2020, enough to power 18 million homes, and it is projected to generated 20% of U.S. electricity by 2050.
- You can help the environment: electricity is made from fossil fuels; when burned, they release harmful gases that contribute to climate change and air pollution.
- Reduce energy bills: depending on how many solar panels you install, your electricity bill will be reduced and possibly eliminated. If your solar panels produce excess energy, it can be sold to your power company.
- Earn tax credits: receive a 30% federal tax credit when filing your taxes and possibly receive a local energy rebate.

What is the Northern Arizona Solar Panel Co-Op?

The Co-Op is a group comprised of the following partner organizations:

- City of Sedona
- Solar United Neighbors
- City of Flagstaff
- Coconino County
- Flagstaff Sustainability Program

Together, over 220 Northern Arizona residents signed on to get more details on going solar. The Co-Op assists with:

- understanding solar
- answering questions
- finding the best solar provider for individual needs
- joining a community of solar users
- making a big impact, including creating jobs, putting energy production and the benefits back into the hands of the people, and contributing to cleaner air and water
- getting better prices by using economies of scale to group purchase solar from one company at a discount

What is the City doing to convert to green power?

Most current initiatives have tackled energy at the municipal level, but with efforts like the solar co-op, efforts to transition to green energy are at the community level too.

Additionally, at a very preliminary juncture, we trying to have some dialogue with APS for options at the community scale. Green power or energy is defined as that with the most environmental benefits including solar, wind, geothermal, biogas, biomass, and small hydroelectric sources.

Here are the actions the City has taken to date:

- In 2021, the City received about 15% (roughly 1,040 MWh) of its electricity from the wastewater solar farm.
- On September 28th, 2022, Sedona City Council approved participation in the Green Power Partners Program with Arizona Public Service (APS) to procure 100% renewable energy (e.g., solar and wind) for its entire electrical demand. This will mean that as of October 2022, 100% of the electricity for the City's applicable municipal operations will come from off-site renewable energy sources that feed into the APS service territory. Additionally, participation in this program will reduce approximately 50 percent of municipal greenhouse gas emissions through the renewable energy credits the City will receive.
- Additional installation of solar panels at City properties and infrastructure is being explored. The Northern Arizona Solar Panel Co-op was offered to residents, that resulted in 57 regional households contracting for residential solar.