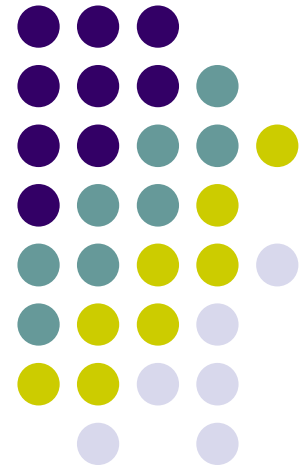


# Scottsdale Solar Energy Trends 2022

## City of Scottsdale Green Building Program

January 6, 2023

Anthony Floyd, FAIA, LEED-AP  
City of Scottsdale  
Office of Environmental Initiatives



# Solar Permits - 2022

<b>2022 Quarter</b>	<b>Solar Electric PV Permits</b>	<b>Solar Hot Water Permits</b>	<b>Total Permits</b>
<b>1<sup>st</sup></b>	270	0	270
<b>2<sup>nd</sup></b>	266	0	266
<b>3<sup>rd</sup></b>	333	0	333
<b>4<sup>th</sup></b>	296	0	296
<b>Total</b>	<b>1,165</b>	<b>0</b>	<b>1,165</b>

Source: Scottsdale CDS permit records

# Solar Permits - 2021

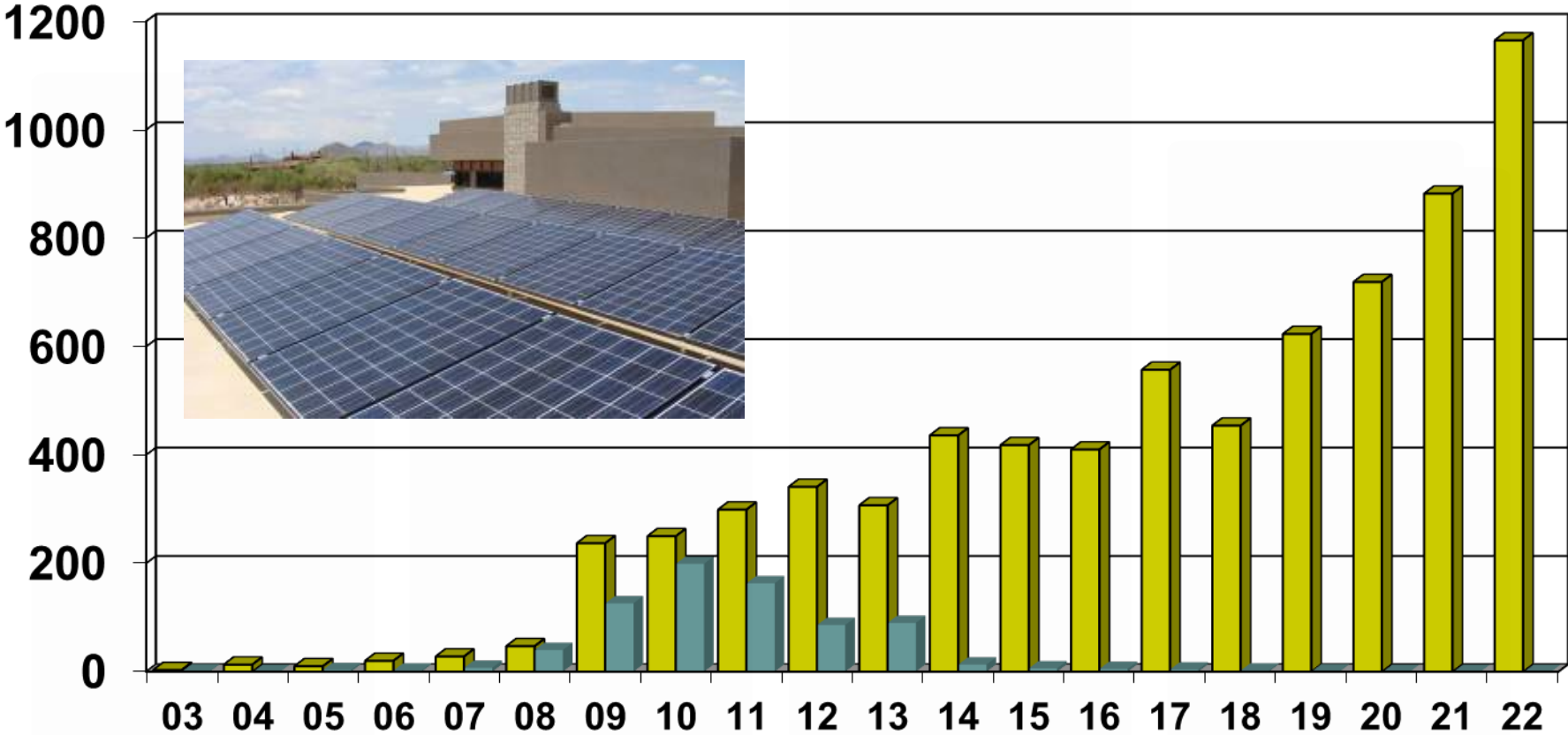
<b>2021 Quarter</b>	<b>Solar Electric PV Permits</b>	<b>Solar Hot Water Permits</b>	<b>Total Permits</b>
<b>1<sup>st</sup></b>	<b>173</b>	<b>0</b>	<b>173</b>
<b>2<sup>nd</sup></b>	<b>215</b>	<b>0</b>	<b>215</b>
<b>3<sup>rd</sup></b>	<b>285</b>	<b>0</b>	<b>285</b>
<b>4<sup>th</sup></b>	<b>209</b>	<b>0</b>	<b>209</b>
<b>Total</b>	<b>882</b>	<b>0</b>	<b>882</b>

Source: Scottsdale CDS permit records

# Solar installations 2002 to 2022



7,969 solar PV and hot water installations (10.4% of 76,438 owner-occupied homes)



Source: Scottsdale CDS permit records and US Census 2019 housing estimates

# Solar Permits 2002 to 2022

## Solar Electric (PV)

7,221 solar PV permits issued

Year	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22
Permits	2	3	13	10	20	28	47	237	250	299	341	307	436	418	410	557	454	623	719	882	1165

## Solar Hot Water

748 solar hot water permits issued

Year	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22
Permits	-	1	0	3	2	7	40	126	199	163	86	90	13	6	5	4	2	1	0	0	0

Note: Many early solar permits (2002 – 2008) were designated as minimum electrical, plumbing or water heater permits.

Source: Scottsdale CDS permit records

# On-Site Energy Generation and Environmental Impact Reduction of Solar Electric (PV) Systems

Estimated energy savings and equivalent greenhouse gas reduction resulting from installed roof top solar PV systems in **2022**.

Green Home Energy Measures	Annual Energy Savings and Pollution Reduction	
	Per Home	Total Savings for <b>1,165</b> solar PV roof tops in 2022
<b>Average PV system size</b>	<b>10 kW</b>	<b>11.65 MW</b>
<b>Average Annual On-Site Energy Generation<sup>1</sup></b>	16,427 Kilowatt hours (kWh)	19,137,455 Kilowatt hours (kWh)
<b>Average Annual Energy Value<sup>1</sup></b>	<b>\$1,784</b>	<b>\$2,078,360</b>
<b>Equivalent Annual Greenhouse Gas Reduction<sup>2</sup></b>	12.8 tons of carbon dioxide (CO <sub>2</sub> ) avoided	14,912 tons of carbon dioxide (CO <sub>2</sub> ) avoided
<b>Equivalent Passenger Vehicles removed from Street<sup>2</sup></b>	2.5 cars	2,913 cars
<b>Equivalent miles driven by an average passenger vehicle<sup>2</sup></b>	29,257 miles	34,084,405 miles

Sources: <sup>1</sup>[pwwatts.nrel.gov](http://pwwatts.nrel.gov); <sup>2</sup>[epa.gov/energy/greenhouse-gas-equivalencies-calculator](http://epa.gov/energy/greenhouse-gas-equivalencies-calculator)

# On-Site Energy Generation and Environmental Impact Reduction of Solar Electric (PV) Systems

Estimated energy savings and equivalent greenhouse gas reduction resulting from installed roof top solar PV systems from **2002 to 2022**.

Green Home Energy Measures	Annual Energy Savings and Pollution Reduction	
	Per Home	Total Savings for <u>7,221</u> solar PV roof tops
<b>Average PV system size</b>	<b>10 kW</b>	<b>72.21 MW</b>
<b>Average Annual On-Site Energy Generation<sup>1</sup></b>	16,427 Kilowatt hours (kWh)	118,619,367 Kilowatt hours (kWh)
<b>Average Annual Energy Value<sup>1</sup></b>	<b>\$1,784</b>	<b>\$12,882,264</b>
<b>Equivalent Annual Greenhouse Gas Reduction<sup>2</sup></b>	12.8 tons of carbon dioxide (CO <sub>2</sub> ) avoided	92,429 tons of carbon dioxide (CO <sub>2</sub> ) avoided
<b>Equivalent Passenger Vehicles removed from Street<sup>2</sup></b>	2.5 cars	18,053 cars
<b>Equivalent miles driven by an average passenger vehicle<sup>2</sup></b>	29,257 miles	211,264,797 miles

Sources: <sup>1</sup>[pwwatts.nrel.gov](http://pwwatts.nrel.gov); <sup>2</sup>[epa.gov/energy/greenhouse-gas-equivalencies-calculator](http://epa.gov/energy/greenhouse-gas-equivalencies-calculator)