Local Government Clean Energy Report

Holly Springs, North Carolina

Created: April 2022

NC SUSTAINABLE ENERGY ASSOCIATION

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About North Carolina Sustainable Energy Association

North Carolina Sustainable Energy Association (NCSEA) is the leading 501(c)(3) non-profit organization that drives public policy and market development for clean energy. Our work enables clean energy jobs, economic opportunities, and affordable energy options for North Carolinians. Learn more about NCSEA, our mission, and vision at www.energync.org.

Introduction

Where does this data come from?

Solar PV

Before electricity-generating systems can be interconnected, they must register with paperwork that is filed to the North Carolina Utilities Commission (NCUC). This paperwork includes Reports of Proposed Construction (ROPCs) and Certificates of Public Convenience and Necessity (CPCNs), depending on their generating capacity. NCSEA tracks these ROPC and CPCN filings and compiles them into the Renewable Energy Database (REDB), which is the source of information for this report. The REDB is the most comprehensive source of data on clean energy systems in the state, and includes information on system technology type, size, and location.

What does the REDB contain?

- Application Information
  - NCUC Docket Number
  - Docket Description
  - Application Date, Quarter, and Year
- Facility Type
  - Residential, Commercial, etc.
- Project Name
- Account Holder Company
- Project Location
  - Address, City, County, NCSEA Region, State, Zip Code, Lat/Long
- General System Type
  - Biomass, Solar, Wind, etc.
- Specific System Type
  - Biogas, PV, Thermal, Waste to Heat, etc.

- System Notes
  - Poultry Waste, Swine Waste, Rooftop, Ground-mount, etc.
- System Capacity
- System Total Cost and Cost per Watt
- To whom the electricity and RECs are sold
- Installer Company
- Whether the system has been installed
- System Operation Date, Year, and Quarter
- How the system information was verified
- Political Districts in which system is located
  - NC House and Senate
  - US Senate

Figure 1. Information contained in NCSEA's Renewable Energy Database (REDB)

How does NCSEA define renewable energy categories?

While there is no industry standard for defining renewable energy system categories, based on research and internal discussion, NCSEA groups them into three general categories which depend on their location, size, and/or use:

1. **Residential** - a renewable energy system of any generating capacity that is installed on or near a home/residence and produces electricity for use in that home/residence.
2. **Commercial/Industrial** - a renewable energy system with a generating capacity under 2 MW (AC) that is installed on or near a non-residential building that produces electricity for use in that non-residential building.
3. **Utility-Scale** - a renewable energy system with a generating capacity of 2 MW (AC) or greater that generates electricity for sale to an electricity utility.

Background Information

North Carolina is a leader in renewable energy, and specifically in solar photovoltaic (PV) systems. As of Q4 2021, North Carolina has the fourth most installed solar PV capacity in the United States, with over 7,800 MW.[1]

While most of that capacity comes from utility-scale solar PV systems, there are many residential and commercial/industrial systems across the state too. Solar PV, however, is not the only type of renewable energy technology that contributes electricity to our grid. In fact, there are many hydroelectric, bioenergy, and wind systems in North Carolina, but this report focuses on solar PV, since those are the only renewable energy systems in Holly Springs.

Current Renewable Energy Systems in Holly Springs

All Systems

Holly Springs does not contain any utility-scale solar PV systems, however, there are many residential and commercial installations. In fact, residential systems make up 98% of the renewable energy systems in Holly Springs.

In contrast, residential systems only account for 56% of the town renewable energy generating capacity. This means that commercial systems make up 2% of systems but account for 44% of Holly Springs's renewable energy capacity.

CATEGORY	# OF SYSTEMS	CAPACITY (MW)
COMMERCIAL	4	1.04
RESIDENTIAL	195	1.34
TOTAL	199	2.37

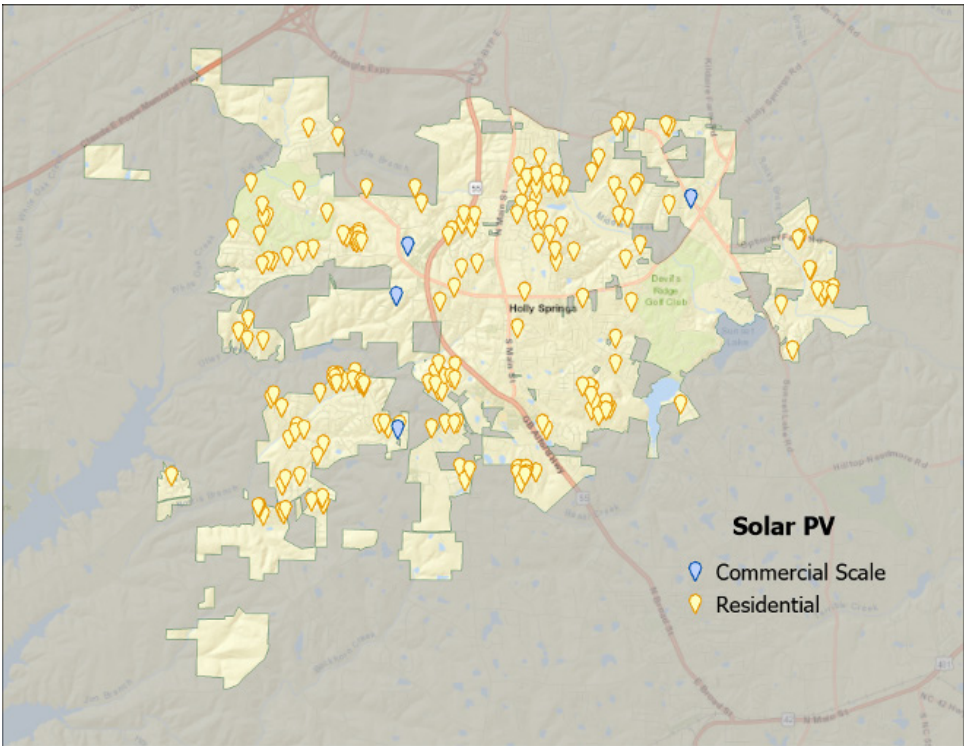Table 1. Solar PV systems installed in Holly Springs

Figure 2. Solar PV systems located in Holly Springs by category

Commercial System Subcategories

Commercial solar PV systems serve a variety of uses in Holly Springs, including an office, a storage facility, and a Target store.

CATEGORY	# OF SYSTEMS	CAPACITY (MW)
OFFICE	1	0.01
RETAIL	2	0.92
STORAGE FACILITY	1	0.11

Table 2. Commercial solar PV systems installed in Holly Springs by subcategory

Renewable Energy Systems and Capacity since 2009

The first solar PV systems were installed in Holly Springs starting in 2009. While there was modest growth until 2018, solar PV has increased by 126% between then and 2020. Comparatively, solar PV grew 82% throughout Wake County over that same period.

The first commercial solar PV system was installed in Holly Springs in 2010. The next two were installed in 2014 and 2015 and the last was installed in 2020 (based on data collected through 2020).
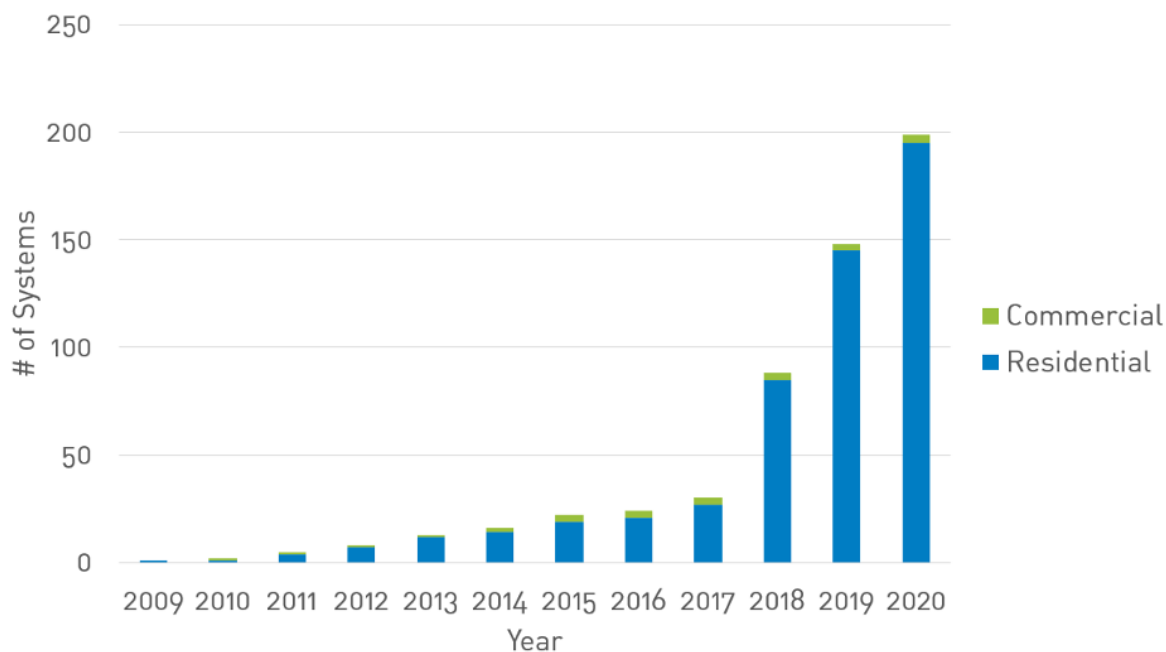

Figure 3. Cumulative solar PV systems installed in Holly Springs by category, 2009–2020

Residential solar PV capacity has grown significantly more (146%) than commercial capacity (12%) since 2018. In total, capacity has grown by 62%, which is almost three times as much as the 23% growth in capacity for Wake County as a whole over that time.
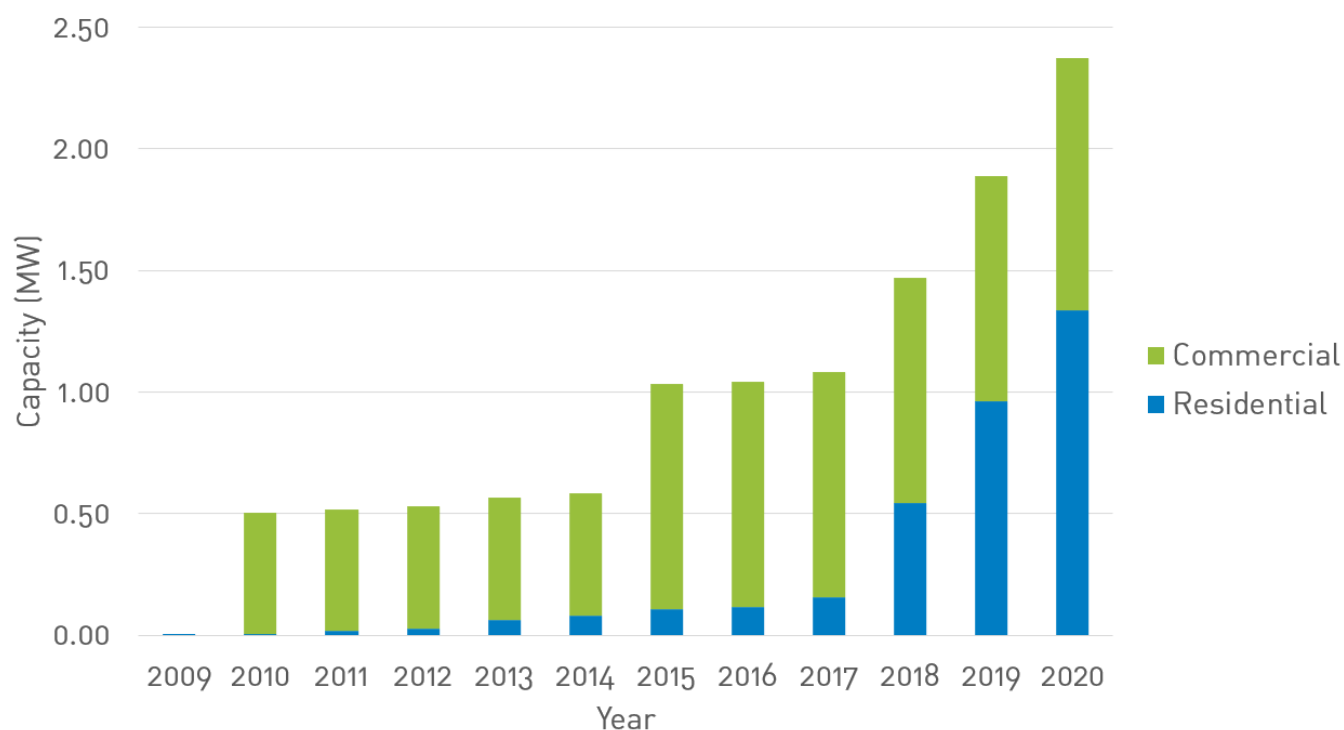

Figure 4.Cumulative solar PV capacity installed in Holly Springs by category, 2009-2020

Comparing Holly Springs to Others

Holly Springs elected a number of municipalities across the state to compare solar installation progress. Those municipalities include Apex, Chapel Hill, Concord, Fuquay-Varina, Kannapolis, and Wake Forest.

Number of Systems

When compared to the other municipalities, Holly Springs has the 2nd most total renewable energy systems.
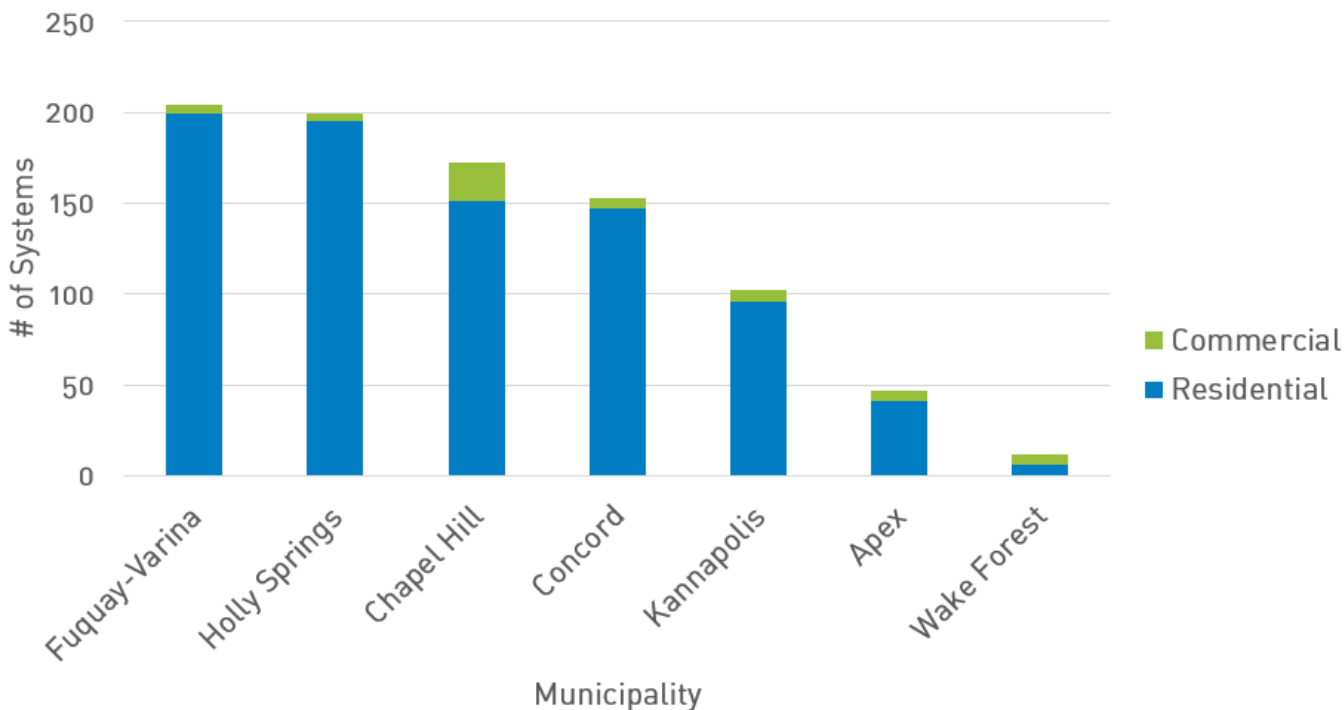
Figure 5. Renewable energy systems in selected municipalities in North Carolina

Holly Springs also has the 2nd most residential systems but has the fewest commercial systems.

MUNICIPALITY	RESIDENTIAL	COMMERCIAL	TOTAL
FUQUAY-VARINA	199	5	204
HOLLY SPRINGS	195	4	199
CHAPEL HILL	151	21	172
CONCORD	147	6	153
KANNAPOLIS	96	6	102
APEX	41	6	47
WAKE FOREST	6	6	12

Table 3. Renewable energy systems in selected municipalities by category

Since 2018, Holly Springs has had the 3rd highest total renewable energy system growth (126%), behind Concord (147%) and Kannapolis (127%).

In terms of residential systems, Holly Springs is also 3rd behind Concord (163%) and Kannapolis (146%) with 129% growth.

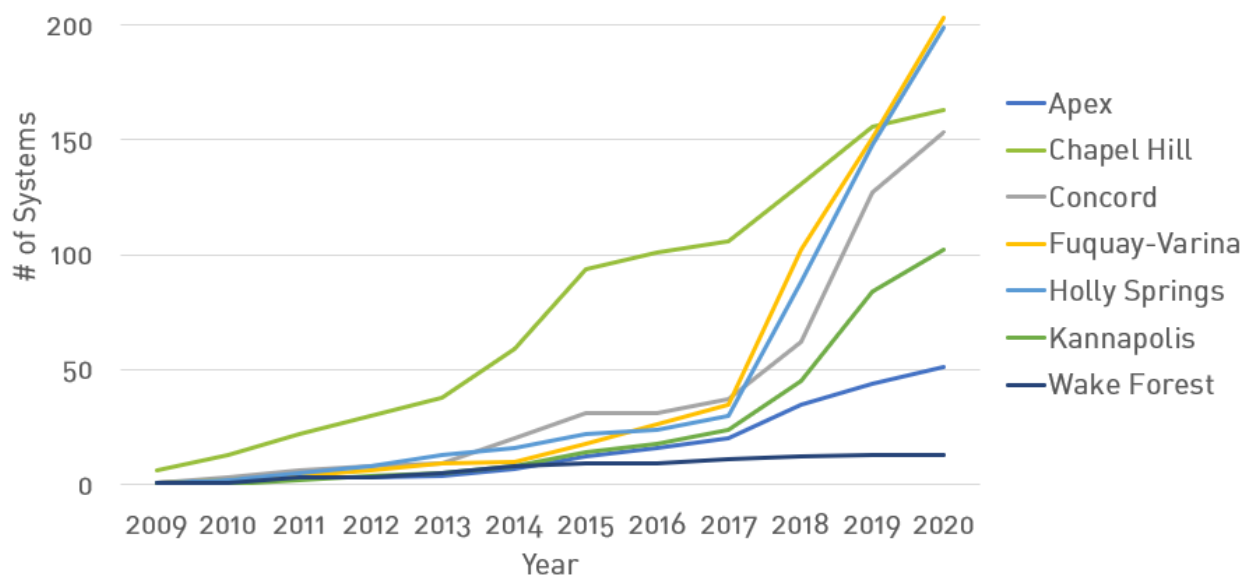Holly Springs is the only municipality with commercial system growth from 2018-2020 with 33%.

Figure 6. Cumulative renewable energy systems installed in selected municipalities in North Carolina

Renewable Energy Capacity

When compared to these other municipalities, Holly Springs has the 2nd most total renewable energy generating capacity.

Figure 7. Renewable energy generating capacity in selected municipalities in North Carolina

Holly Springs has both the 2nd most residential solar PV capacity as well as the 2nd most commercial capacity too.

MUNICIPALITY	RESIDENTIAL (MW)	COMMERCIAL (MW)	TOTAL (MW)
KANNAPOLIS	0.66	5.25	5.90
HOLLY SPRINGS	1.34	0.94	2.27
FUQUAY-VARINA	1.37	0.83	2.19
CONCORD	0.95	0.73	1.68
CHAPEL HILL	1.00	0.36	1.36
APEX	0.29	0.67	0.96
WAKE FOREST	0.03	0.70	0.73

Table 4. Renewable energy generating capacity in selected municipalities in North Carolina

Since 2018, Holly Springs has the highest rate of total renewable energy capacity growth (62%) but is closely followed by Concord (61%) and Fuquay-Varina (47%).

In terms of residential solar PV capacity growth, Holly Springs is 3rd behind Concord (204%) and Kannapolis (159%) with 146%.

Again, since Holly Springs is the only municipality from this list with commercial system growth from 2018-2022, it is also the only one with commercial capacity growth too (12%).
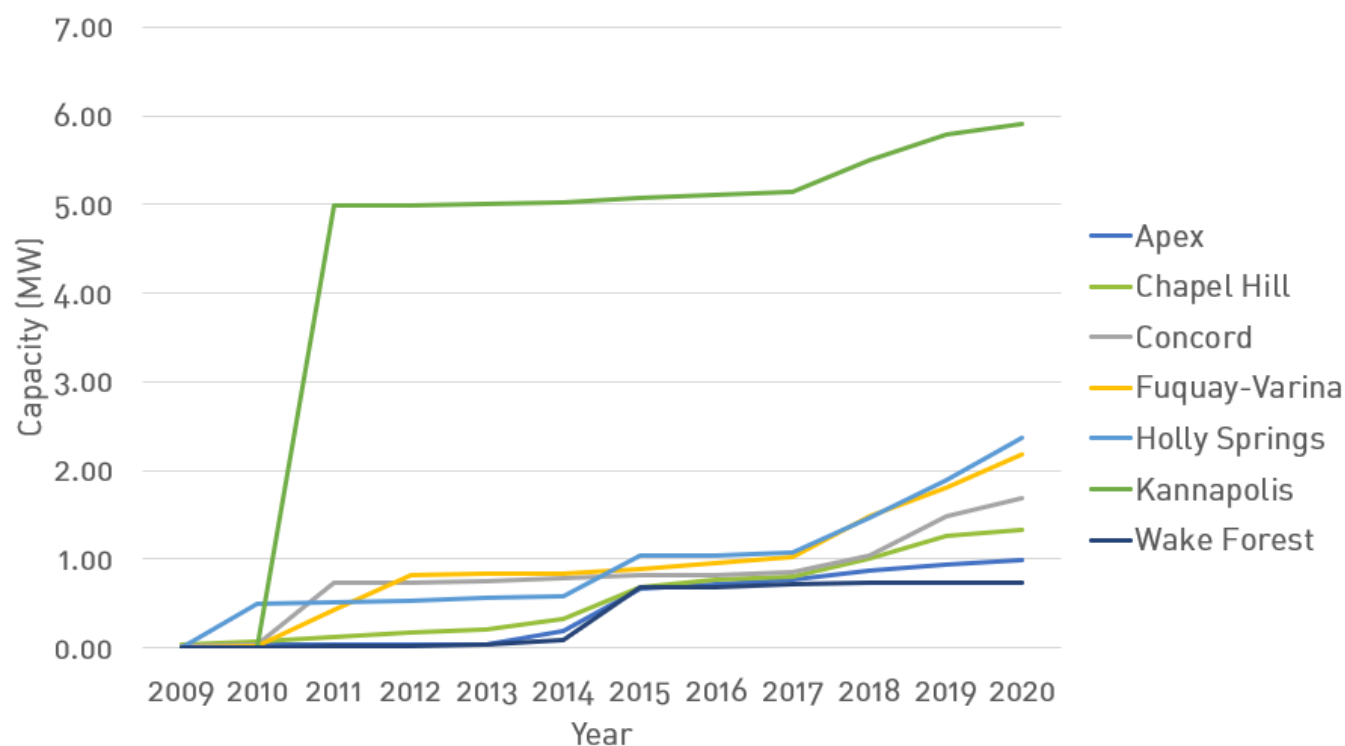

Figure 8. Cumulative renewable energy capacity in selected municipalities in North Carolina

Other Municipalities in North Carolina with Populations between 30,000 and 62,000 People

Number of Systems

Holly Springs has the 2nd most residential solar PV systems per 1,000 people of the municipalities in the state with a population between 30,000 and 62,000.[3] In addition to the municipalities against which Holly Springs has already been compared, NCSEA selected an additional group with populations comparable in size, leading to a range between 30,000 and 62,000 citizens.

MUNICIPALITY	# OF RESIDENTIAL SOLAR PV SYSTEMS	POPULATION	RESIDENTIAL SYSTEMS PER 1,000 PEOPLE
FUQUAY-VARINA	199	34,152	5.83
HOLLY SPRINGS	195	41,239	4.73
GARNER	113	31,159	3.63
CHAPEL HILL	151	61,960	2.44
MOORESVILLE	97	50,193	1.93
KANNAPOLIS	96	53,114	1.81
BURLINGTON	58	57,303	1.01
SALISBURY	34	35,540	0.96
INDIAN TRAIL	38	39,997	0.95
HICKORY	38	43,490	0.87

Table 5. Residential solar PV systems per 1,000 people in North Carolina municipalities with populations between 30k and 62k

Renewable Energy Capacity

Holly Springs also has the 2nd most residential solar PV capacity per 1,000 people of the cities in North Carolina with a population between 30,000 and 62,000.[4] It is one of only two municipalities in this subset that have a residential solar PV capacity above 1,000 kW.

MUNICIPALITY	TOTAL RESIDENTIAL SOLAR PV CAPACITY (KW)	POPULATION	CAPACITY PER 1,000 PEOPLE (KW)
FUQUAY-VARINA	1,338	34,152	39.18
HOLLY SPRINGS	1,304.7	41,239	31.64
GARNER	773	31,159	24.81
CHAPEL HILL	960.8	61,960	15.51
MOORESVILLE	630.8	50,193	12.57
KANNAPOLIS	624.1	53,114	11.75
CORNELIUS	202.1	31,412	6.43
INDIAN TRAIL	256.4	39,997	6.41
SALISBURY	224.4	35,540	6.31
APEX	328.2	58,780	5.58

Table 6. Residential solar PV capacity per 1,000 people in North Carolina municipalities with populations between 30k and 62k

Energy Efficient Buildings

Types of Certification: ENERGY STAR® and LEED®

Two of the most popular certifications for buildings to demonstrate their energy efficiency are ENERGY STAR and LEED. For commercial buildings, the US Environmental Protection Agency's ENERGY STAR program helps building owners benchmark their energy usage and assigns each building a score according to its efficiency.[5] The median score of these buildings is 50, and those with scores of 75 or more are eligible for ENERGY STAR certification.[6]

Leadership in Energy and Environmental Design (LEED) is a program run by the US Green Building Council that focuses on whole building sustainability, including water use reduction and improved indoor air quality, in addition to building energy efficiency.[7] There are a variety of certifications that can be achieved depending on the use of the building and its stage of development.[8]

Both ENERGY STAR and LEED maintain datasets of the buildings that currently meet their certification standards.[9,10]

Holly Springs has the 19th most total certified energy efficient buildings of the twenty municipalities in North Carolina with populations between 30,000 and 62,000 people. Most of its buildings are ENERGY STAR certified (75%).

MUNICIPALITY	ENERGY STAR	LEED	TOTAL
CHAPEL HILL	13	30	43
ROCKY MOUNT	20	2	22
GOLDSBORO	15	6	21
SALISBURY	14	5	19
KANNAPOLIS	12	4	16
NEW BERN	13	3	16
GARNER	12	3	15
MOORESVILLE	6	8	14
BURLINGTON	10	3	13
HICKORY	10	3	13
HUNTERSVILLE	9	3	12
MONROE	9	3	12
SANFORD	5	4	9
WAKE FOREST	7	2	9
WILSON	6	2	8
FUQUAY-VARINA	5	2	7
APEX	5	1	6
CORNELIUS	6	0	6
HOLLY SPRINGS	3	1	4
INDIAN TRAIL	4	0	4

Table 7. Certified energy-efficient buildings located in municipalities in North Carolina with populations between 30k and 62k

The LEED certified building achieved its status in 2019 and the ENERGY STAR certified buildings were rated in 2009, 2015, and 2016.[11, 12]

BUILDING	ADDRESS	GROSS FLOOR AREA (FT²)	CERTIFICATION YEARS	YEAR CONSTRUCTED	CERTIFICATION TYPE
FOOD LION	517 NORTH MAIN ST.	33,818	2009	1995	ENERGY STAR
TARGET	100 GRAND HILL PL.	135,137	2015	2013	ENERGY STAR
HARRIS TEETER	300 VILLAGE WALK DR.	54,061	2016	2009	ENERGY STAR
UNC REX HOLLY SPRINGS MEDICAL OFFICE BUILDING	781 AVENT FERRY ROAD	48,951	2019	2018	LEED

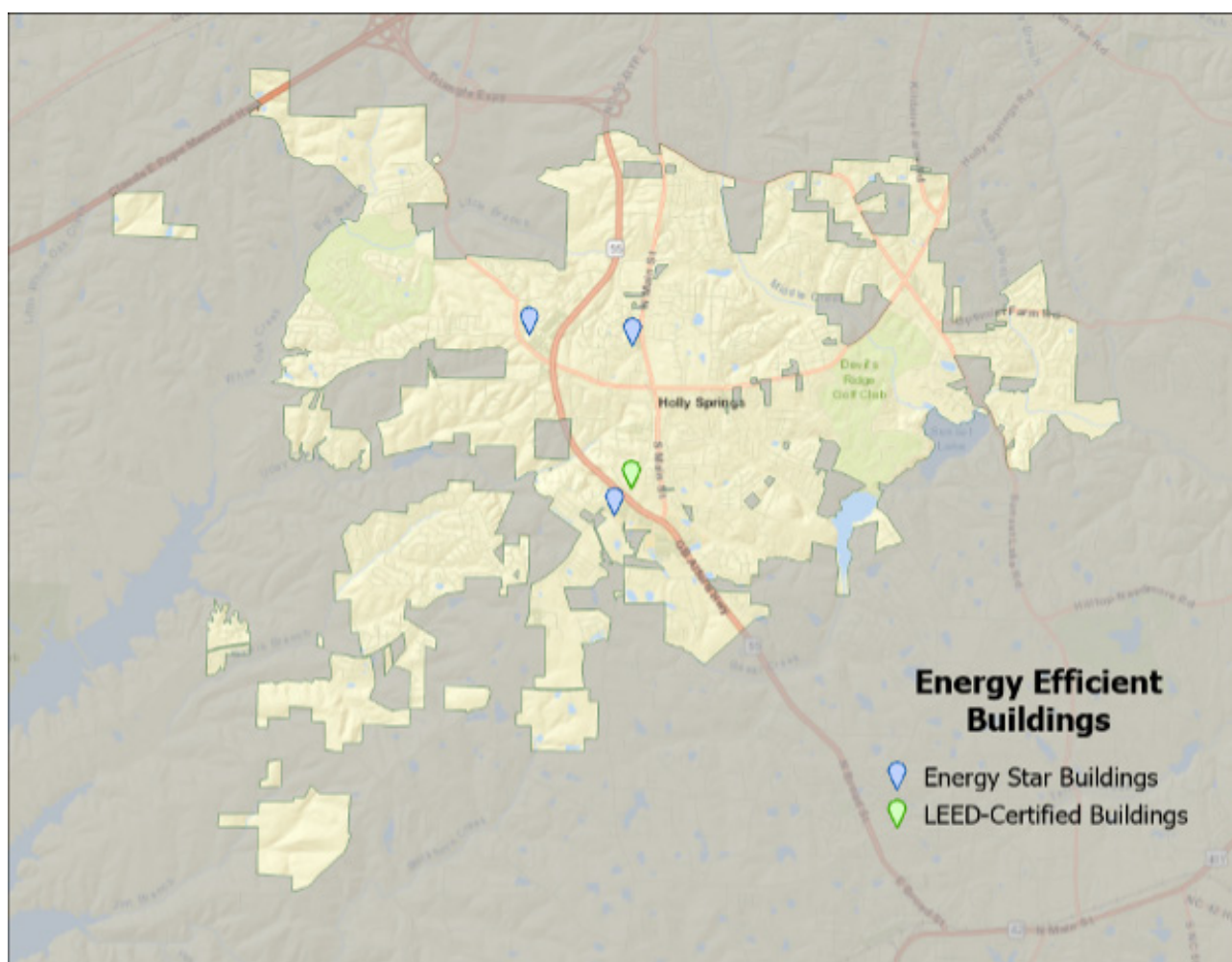Table 8. ENERGY STAR and LEED Certified Buildings in Holly Springs

Figure 9. Certified energy efficient buildings located in Holly Springs by category

Holly Springs ranks 18th on the list of total ENERGY STAR and LEED certified building square footage. This ranking is among other municipalities in North Carolina with populations between 30,000 and 62,000 people. There is more area in ENERGY STAR certified buildings (82%) than in LEED certified ones.

MUNICIPALITY	ENERGY STAR BUILDINGS (FT²)	LEED-CERTIFIED BUILDINGS (FT²)	TOTAL (FT²)
CHAPEL HILL	1,159,928	2,178,796	3,338,724
ROCKY MOUNT	1,369,333	250,467	1,619,800
NEW BERN	1,421,987	111,381	1,533,368
GOLDSBORO	1,306,248	223,180	1,529,428
MOORESVILLE	690,373	831,988	1,522,361
KANNAPOLIS	1,095,608	330,467	1,426,075
HUNTERSVILLE	1,191,292	77,239	1,268,531
MONROE	1,097,352	44,089	1,141,441
SALISBURY	897,263	223,548	1,120,811
GARNER	851,986	93,433	945,419
HICKORY	718,303	176,450	894,753
CORNELIUS	689,547	0	689,547
BURLINGTON	543,282	125,440	668,722
WILSON	630,249	17,251	647,500
WAKE FOREST	487,056	137,576	624,632
APEX	395,762	4,261	400,023
FUQUAY-VARINA	215,403	95,322	310,725
HOLLY SPRINGS	223,016	48,951	271,967
INDIAN TRAIL	202,639	0	202,639
SANFORD	171,094	29,528	200,622

Table 9. Area in certified energy efficient buildings in municipalities in North Carolina with populations between 30k - 62k

Electric Vehicle Charging Outlets

There are a variety of sources that offer information on the locations of EV charging stations and outlets, ranging from federal government sources to private networks. Each source varies in how the stations and outlets are verified, so sometimes stations listed in our source may not be in another. For these reports, NCSEA uses the US Department of Energy's Alternative Fuels Data Center database.[13]

A single EV charging station might have one or more charging outlets. Different levels of outlets operate at different voltages, which lead to different charging times. For example, charging an EV at a level 1 station that has an outlet like one found in a home (110 volts, 12-16 amps) will take longer than at a DC Fast Charge outlet, which can deliver power starting at 480 volts at 100 amps.[14] This report only refers to publicly available EV charging outlets.

Electric Vehicle Supply Equipment in Holly Springs and Peer Municipalities

Holly Springs has the 5th most EV charging stations of the selected municipalities.

MUNICIPALITY	EV CHARGING STATIONS
CHAPEL HILL	16
CONCORD	15
WAKE FOREST	10
FUQUAY-VARINA	3
HOLLY SPRINGS	2
APEX	2
KANNAPOLIS	1

Table 10. EV charging stations in selected municipalities in North Carolina

Holly Springs has the 6th most electric vehicle charging station outlets of the selected cities.

MUNICIPALITY	LEVEL 1	LEVEL 2	DC FAST CHARGE
CHAPEL HILL	1	41	0
CONCORD	0	26	2
WAKE FOREST	0	14	5
APEX	0	5	1
FUQUAY-VARINA	0	5	0
HOLLY SPRINGS	0	3	0
KANNAPOLIS	0	2	0

Table 11. EV charging station outlets in selected municipalities in North Carolina by charging level

Other Municipalities in North Carolina with Populations between 30,000 and 62,000 People
Holly Springs has the 16th most EV charging stations of the municipalities in North Carolina with populations between 30,000 and 62,000 people.

MUNICIPALITY	EV CHARGING STATIONS
CHAPEL HILL	16
WAKE FOREST	10
BURLINGTON	7
ROCKY MOUNT	6
WILSON	6
GOLDSBORO	6
HUNTERSVILLE	6
CORNELIUS	5
SANFORD	5
SALISBURY	5
MOORESVILLE	5
NEW BERN	4
HICKORY	4
MONROE	3
FUQUAY-VARINA	3
HOLLY SPRINGS	2
INDIAN TRAIL	2
APEX	2
KANNAPOLIS	1
GARNER	1

Table 12. EV charging stations in municipalities in North Carolina with populations between 30k and 62k

Holly Springs has the 17th most total EV charging outlets of the municipalities in North Carolina with populations between 30,000 and 62,000 people.

MUNICIPALITY	LEVEL 1	LEVEL 2	DC FAST CHARGE	TOTAL
CHAPEL HILL	1	41	0	42
ROCKY MOUNT	0	10	12	22
BURLINGTON	0	12	9	21
WAKE FOREST	0	14	5	19
GOLDSBORO	0	7	9	16
MOORESVILLE	0	15	1	16
HICKORY	0	5	9	14
SALISBURY	0	9	1	10
CORNELIUS	0	7	1	8
HUNTERSVILLE	0	7	1	8
SANFORD	0	7	1	8
WILSON	0	6	1	7
APEX	0	5	1	6
MONROE	0	6	0	6
NEW BERN	0	6	0	6
FUQUAY-VARINA	0	5	0	5
HOLLY SPRINGS	0	3	0	3
GARNER	0	2	0	2
INDIAN TRAIL	0	2	0	2
KANNAPOLIS	0	2	0	2

Table 13. EV charging station outlets in North Carolina municipalities with populations between 30k and 62k by charging level

Endnotes

1. Solar Energy Industry Association (SEIA). "North Carolina Solar." https://www.seia.org/state-solar-policy/north-carolina-solar
2. The University of North Carolina at Chapel Hill: Carolina Demography. "First look at 2020 Census for North Carolina." https://www.ncdemography.org/2021/08/12/first-look-at-2020-census-for-north-carolina/
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5. ENERGY STAR. "About ENERGY STAR for Commercial Buildings." https://www.energystar.gov/about/origins_mission/energy_star_overview/about_energy_star_commercial_buildings
6. ENERGY STAR. "What your 1-100 ENERGY STAR score means." https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager/interpret-your-results/what
7. U.S. Green Building Council. "About: Brand." https://www.usgbc.org/about/brand
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12. U.S. Green Building Council. "Holly Springs MOB II - Core and Shell."
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13. U.S. Department of Energy: Energy Efficiency & Renewable Energy.
    "Alternative Fuels Data Center: Electric Vehicle Charging Station Locations."
    https://afdc.energy.gov/fuels/electricity_locations.html#/analyze?fuel=ELEC&country=
    US&region=US-NC&ev_levels=2&ev_levels=dc_fast&ev_levels=1
14. California Electric Vehicle Infrastructure Project. "Electric Vehicle Charging 101."
    https://calevip.org/electric-vehicle-charging-101