# Planning for Anne Arundel's solar future

## AA's sources of electricity today…

## And tomorrow

# Features of land use planning for solar

‡Planning goals for future sources of solar capacity

‡Actions that steer solar capacity to brownfields, rooftops, and other developed surfaces

‡Changes to lot coverage to sustain farming and rural land uses

‡Restrictions on location to protect sensitive lands

‡Zoning procedures that support sound decision-making

Effective and transparent statutory requirements reflecting best practices for
‡ Screening buffers
‡ Ground cover under solar arrays and in buffers
‡ Decommissioning requirements
‡ Financial and management assurances for the duration of the project
‡ Height, glare, and other standards

# The cost of solar power has dropped dramatically in recent years

The cost per Watt of all types of solar photovoltaics (PV) are fractions of what they were only a few years ago

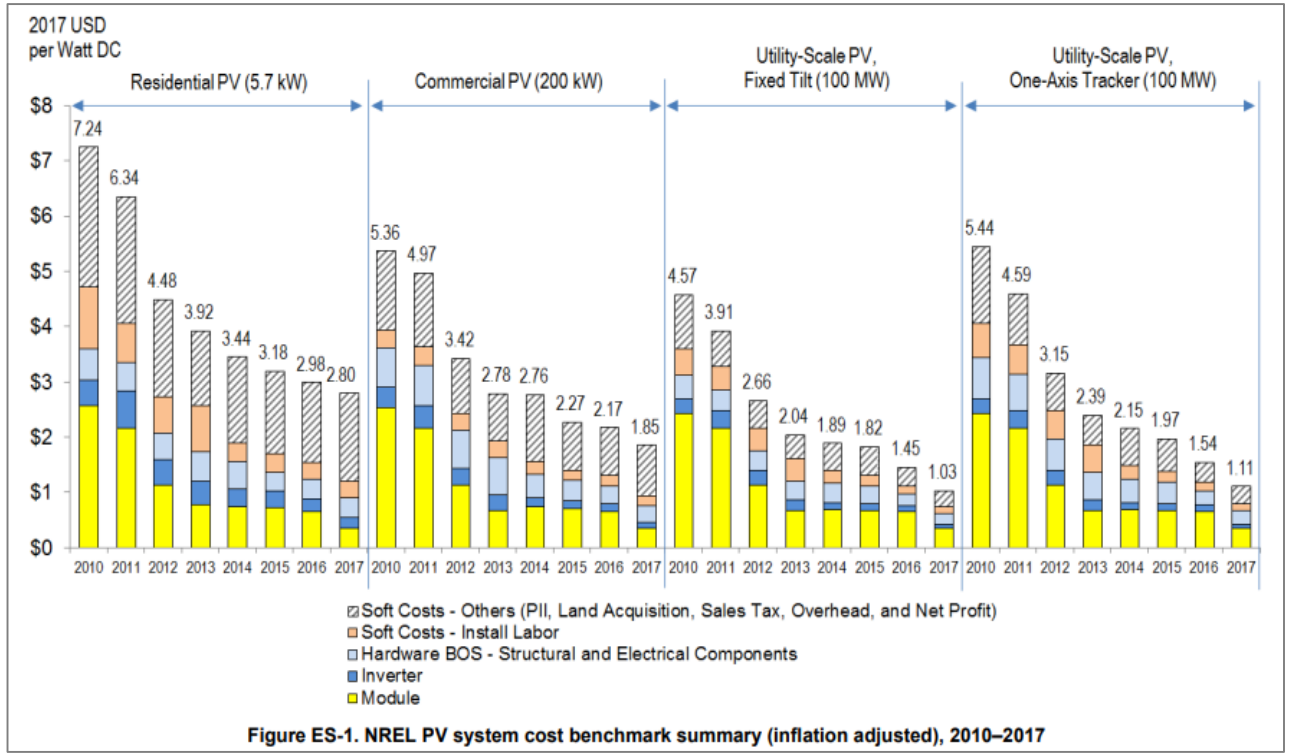



**Figure ES-1. NREL PV system cost benchmark summary (inflation adjusted), 2010–2017**

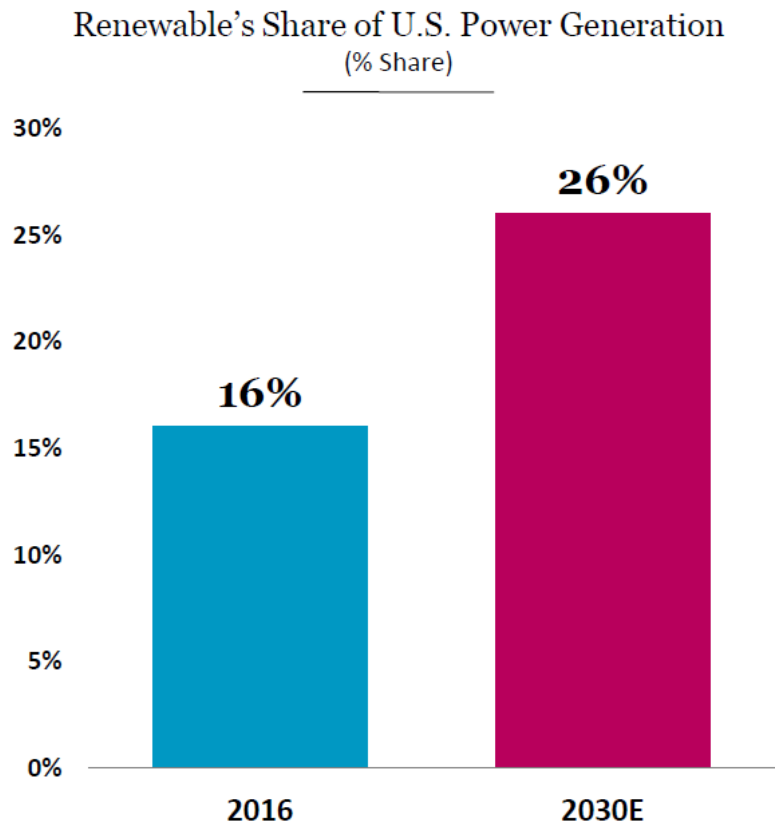
Source: DOE National Renewable Energy Laboratory

‡ Including government incentives, new solar electricity is competitive with all other forms of generation, including natural gas.

‡ With further cost declines in the next few years, solar can be economic even without government incentives.

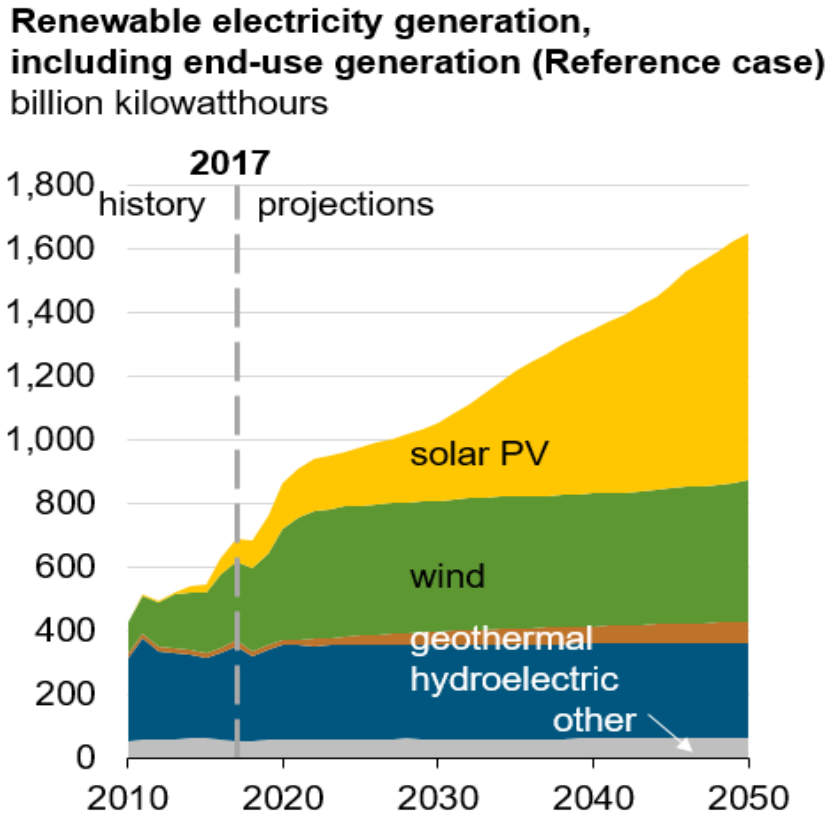
# Cost reductions and government policy will lead to significant growth in solar capacity in the coming years

## Renewable energy is growing as a share of total power generation in the U.S.




Source: Goldman Sachs

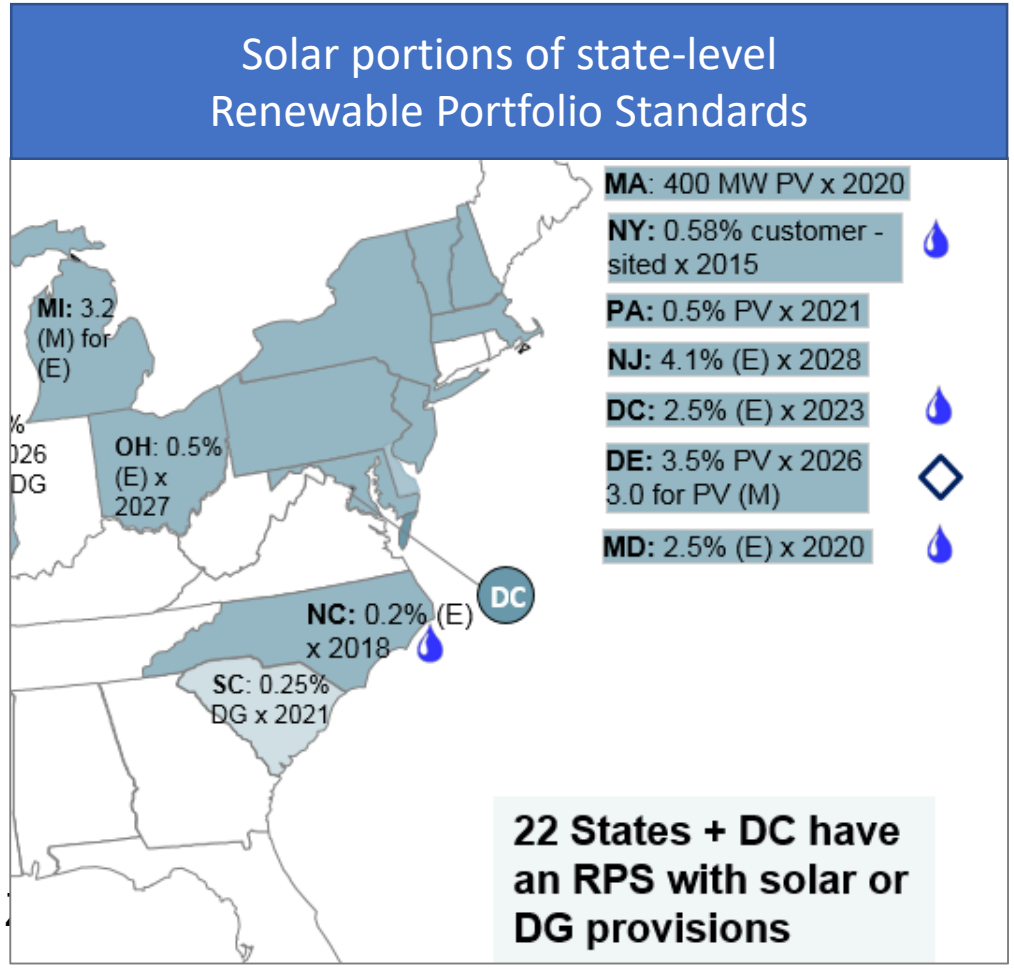
## Solar Photovoltaics (PV) are the fastest growing renewable technology in the U.S.




Source: Dept. of Energy, EIA, 2018

# To support and follow this trend, Maryland has renewable energy goals, including specific targets for in - state solar generation

- Maryland Renewable Portfolio Standard (RPS)
  - Current Policy:
    - 25% of total electricity sales from renewables by 2020
    - Eligible sources: solar, wind, biomass, anaerobic decomposition, geothermal, ocean, fuel cells powered through renewables, small hydro, poultry-litter incineration facilities, waste-to-energy facilities
    - **2.5% must be from in-state solar facilities** (note: the statewide target is not binding at the county level)
- While the solar targets can be achieved with solar energy produced anywhere in Maryland, we applaud Anne Œ µ v o } µ v š Ç ( } Œ } ] v P ] š • ^ ( ] Œ •

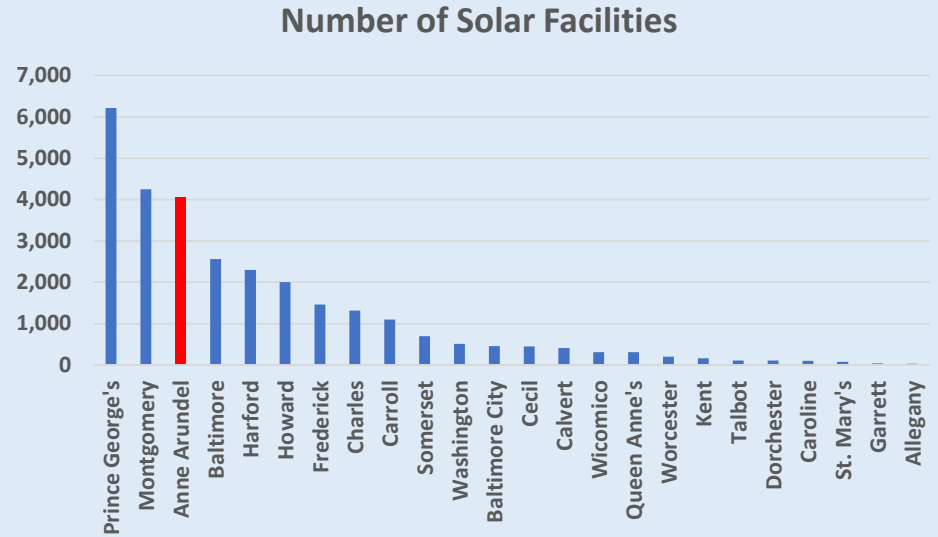


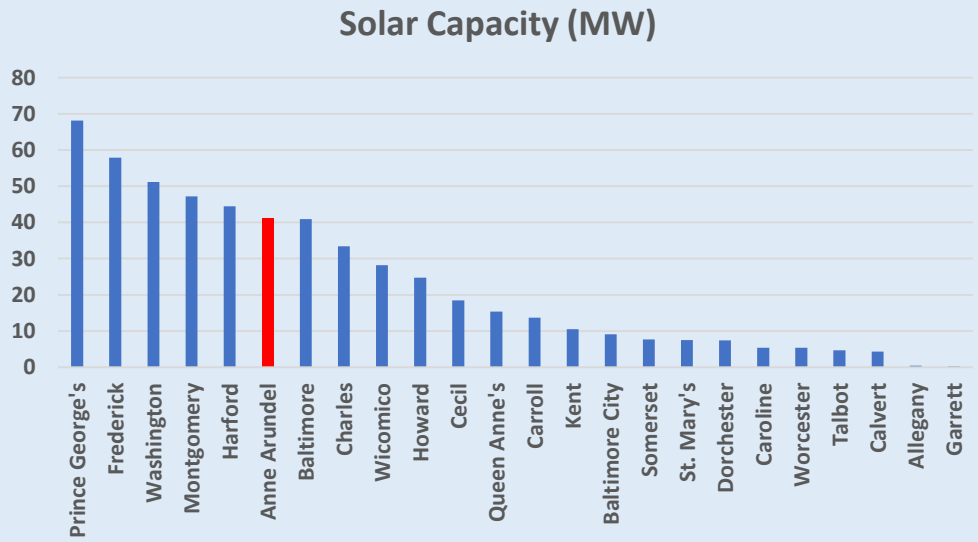

Source: DSIRE, 2018

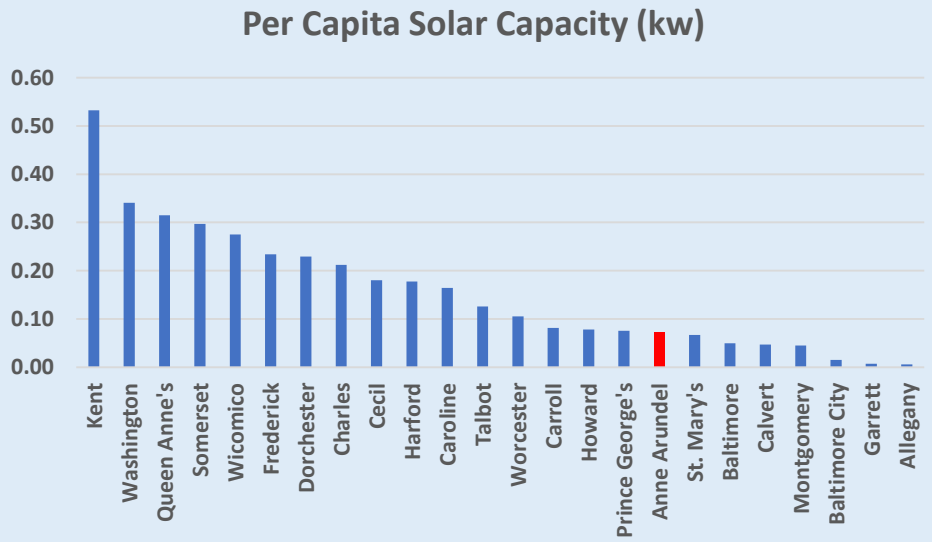
# AA county has a healthy number of rooftop systems, but lags other counties in solar capacity installed per capita

- As of mid-2016, Anne Arundel had:
  - ~4,000 solar installations (mostly rooftop)
  - 41.1 MW of solar capacity
  - Average facility size of 10 kW, which produces ~1.2x the average household consumption in Maryland

Source:
Data as of June 2016, from MD PSC report on Renewable Portfolio Standard, Jan 2017

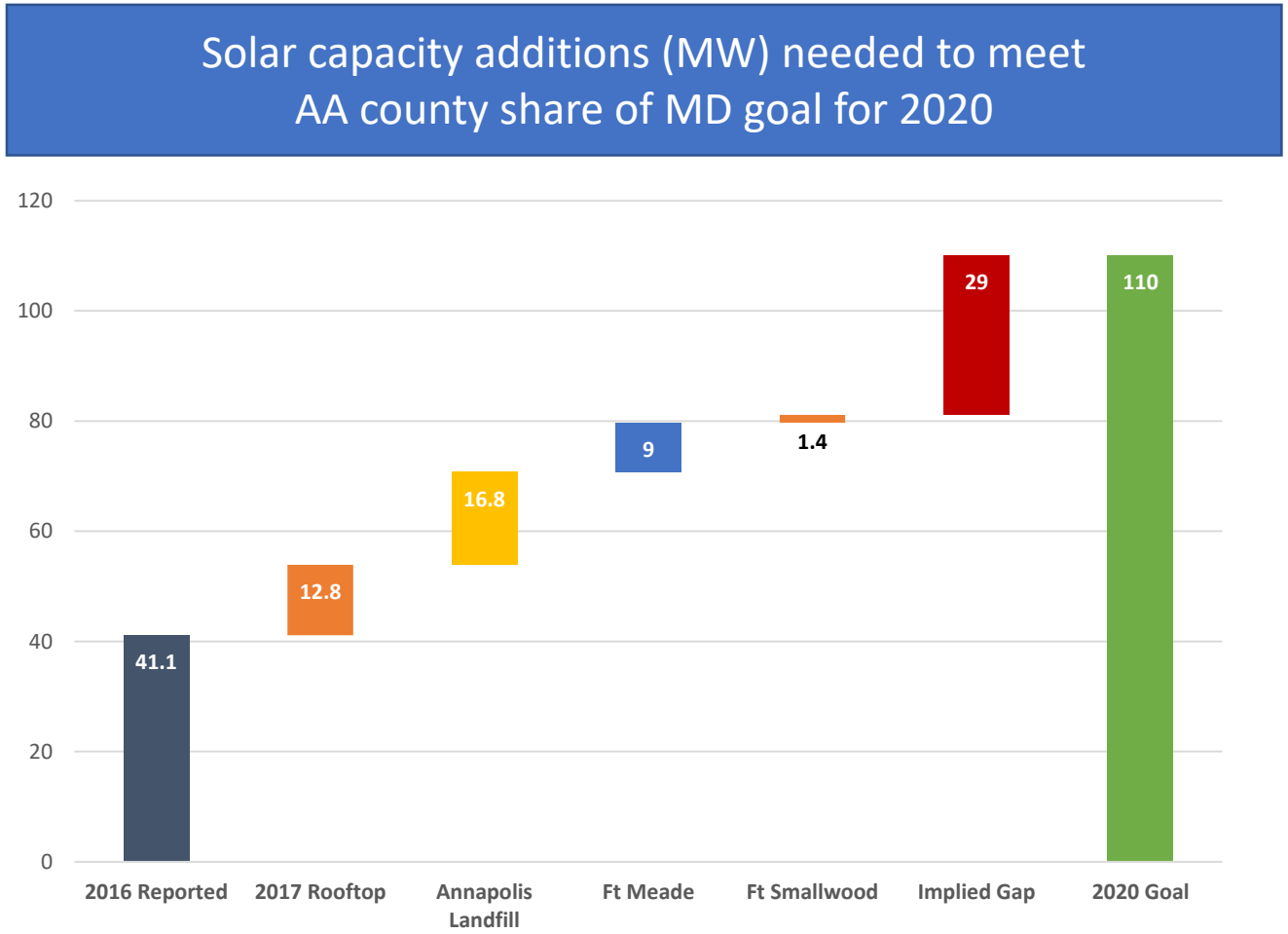


# To reach 2.5% solar by 2020, AA needs about 110 MW of solar, or an increase of about 30 mw between 2017 to 2020*

(additional to known projects)




*Note: The statewide target is not binding at the county level. These figures illustrate the capacity that would be needed if the county met its estimated share of the total.

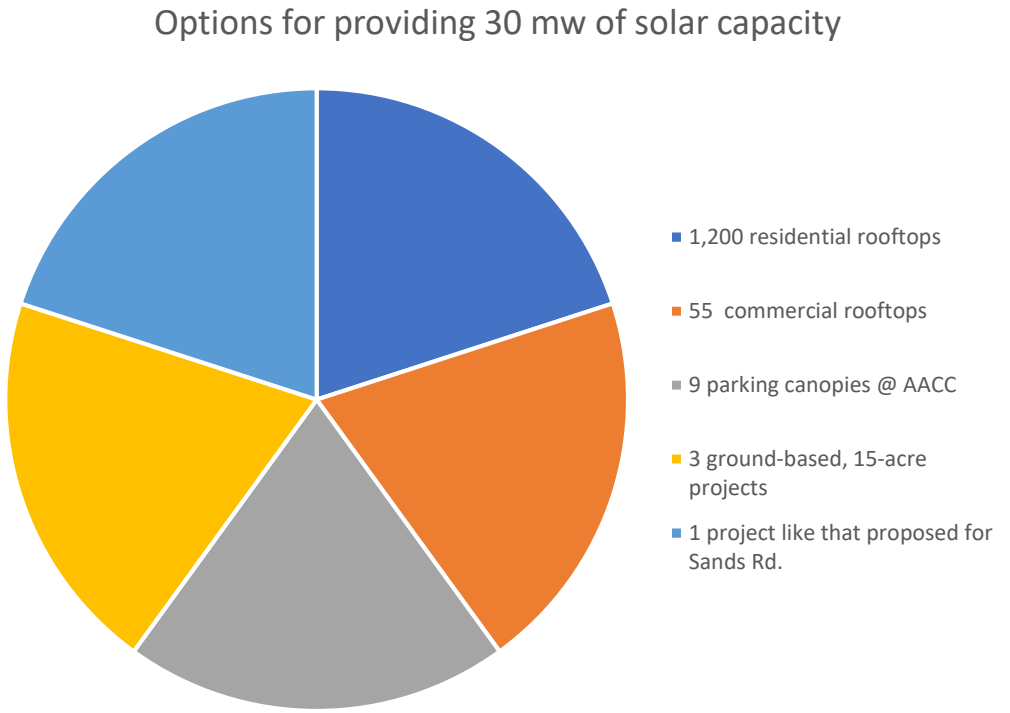
# Options for providing ~ 30 mw from solar by 2020*

## If we want to get all 30 mw from one source, our options would include:

- ‡ 6,000 residential rooftops (0.0005 mw each), or
- ‡ 273 commercial rooftop solar systems like CBF headquarters (0.11mw), or
- ‡ 43 parking canopies like AACC (0.7 mw), or
- ‡ 17 parking canopies like that in Charles County (1.8 mw), or
- ‡ 21 ground-based school sites like Ft. Smallwood (1.4 mw), or
- ‡ 15 ground-based, ~ 15-acre projects @ 2 mw each ~ l ^ }uuµv]šÇ_ solar), or
- ‡ ~ 2 ground-based, ~ 100 acre projects like Annapolis/AA landfill @ 16.8 mw

- ‡ **Or some combination of the above >>>>>>>>>**

## If we want to get 30 mw from "all of the above," that mix could include:




*Note: The statewide target is not binding at the county level. These figures illustrate the capacity that would be needed if the county met its estimated share of the total.

# Put another way:
# Each 2 MW community solar project is ~ equivalent to…

400 residential rooftops

(0.005 MW each)

18 commercial rooftop systems like CBF (0.11 MW)

2.6 parking canopies like that at AACC (0.7 MW), or

1.1 parking canopies like that proposed for Charles County (1.8 MW)

1.4 school arrays like that

at Ft. Smallwood (1.4 MW)

# Policy goals for future solar capacity

(see HB 1350)

1. Maximize solar on brownfields, roof - tops, and other developed surfaces

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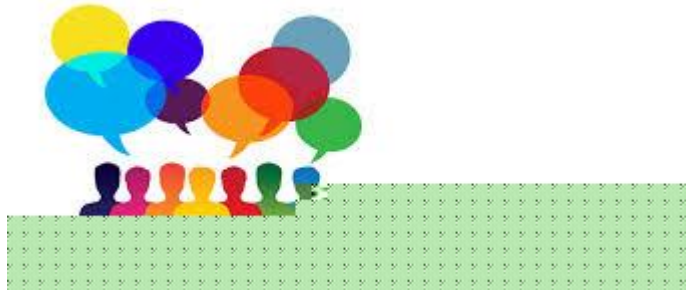
4. Manage solar arrays effectively to protect environment, communities, and taxpayers