Solar Power Would HELP the Montgomery County Agricultural Reserve

Surprising facts about harvesting sunlight in the Ag Reserve – and myths and misunderstandings about its current reality

The Montgomery County Agricultural Reserve overwhelmingly grows food for livestock, not people, and a substantial part of its agriculture produces no food at all. It includes huge sod farms that literally strip the land of soil for suburban yards and golf courses. Yet solar power critics say a limited amount of solar-energy production in the Reserve, delivering power to low-income ratepayers, is bad for the environment? Sierra Club and the Chesapeake Climate Action Network disagree. We support Montgomery County Councilmember Hans Reimer and Council President Tom Hucker in a bill that would allow limited solar production with pollinator-friendly crops and room to grow actual table crops for humans while sequestering carbon in the soil to fight climate change.

Mythbusters – Some new insights into the Ag Reserve

The publicly projected image of the Montgomery County Agricultural Reserve is a place full of sustainable farmers growing food that will feed the county in the face of COVID, where small solar projects that are being called "industrial" will fundamentally change the Reserve's rustic nature, and where a small amount of land used for such projects – even with agriculture incorporated on the same land – will deprive potential farmers of land and drive the rental cost of farmland to unattainable levels.

Hard data from the USDA's most recent (2017)[1] *Census of Agriculture* and other Maryland-specific information clearly show that the reality of the Ag Reserve doesn't exactly match that image…

Most of the crops grown are not feeding the county's residents – they are "commodity crops," grown mostly for large-scale commercial sale and for use in livestock feed.

- The major "commodity crops" produced in the County are:
  - Soy, 14,559 acres
  - Corn, 11,977 acres
  - Hay and other silage, 9,143 acres
  - Wheat, 7,758 acres
  - Total: 43,437 acres (66% of total County farmland)
- Another large segment of County farmland land is used for landscaping plants, sod and other crops that aren't food at all
- Actual acreage in crops most likely to go directly to consumers is very small:
  - Vegetables – 457 acres
  - Orchards – 332 acres
  - Berries – 85 acres

  Total – 874 acres (1.3% of total MoCo farmland)
- 4 farms were registered as USDA certified organic; 6 more were "in transition" to that status

[1] USDA repeats the *Census of Agriculture* every 5 years; the next round will be 2022

The farming methods growing the majority of crops in the Reserve are net carbon emitters and not "sustainable"

- Commodity crops themselves do not yield net carbon sequestration in soil. The county's own greenhouse gas inventory showed that its agriculture is an emitter of global warming gases, and that most of those emissions come from commodity crop production.
- The large machinery used for the large acreage of commodity crops is itself "industrial" and carbon emitting

Actual farming in the Agricultural Reserve

- While the solar ZTA prevents removal of topsoil, sod farming in the Reserve actually rolls up topsoil and takes it away on trucks

Sod produced in the Agricultural Reserve

- In some cases the topsoil itself is actually sold

"Screened Topsoil" for sale in the Reserve

A small number of large farms control the largest share of agricultural land

- There are 558 total farms in the County.
- The County's total land in farms is 65,537 acres.
- The average farm size is 117 acres; the median size is just 25 acres (meaning at least 50% of farms are 25 acres or smaller.
- In contrast, 30 farms are 500 acres or larger, holding 37,905 total acres (58% - more than half) of the total farmland; 13 farms are 1,000 acres or larger, by themselves holding 25,925 acres (40% of the total farmland)
- These large landholdings, and their appetite for additional land, are major competitors with new farmers wanting land.

Farm Income: A few large farmers are doing very well, but most County farms are struggling financially

- Of 558 farms in the County, 395 (71%) had farm income less than $10,000/year; 299 farms (54%) had income less than $2,500/year.
- Average net income (income minus production expenses) across ALL farms was negative; - $6,430 (in the previous [2012] Ag Census, the average was + $2,590 – not great then, but now getting even harder)
- 407 farms – 73% of the total -- had net losses in 2017
- The 40 richest farms (incomes $250,000 and above) had positive incomes totaling $41 million – their average income was $1,025,850 per farm
  - 90% of that $41 million – or $36.75 million– was earned by the 25 very richest farms (incomes $500,000 and above); their average income was $1.47 million per farm

County farmers are aging

- Of the 1,026 male and female farmers the Census identified on the 558 farms, 637 (62%) are age 55 or above; 341 (33%) are 65 or older, and 98 (10%) are 75 or older

The 1,800 acres of land potentially used for Community Solar in the Ag Reserve will not drive up the price of farmland

- The Soil Conservation Office in Prince George's County, where all ground-mounted Community Solar projects in the Pepco area are built, confirms that solar development has had no effect on sale or rental costs of farmland there
- That office also confirmed with other neighboring counties that they have also not experienced any solar effect on land prices

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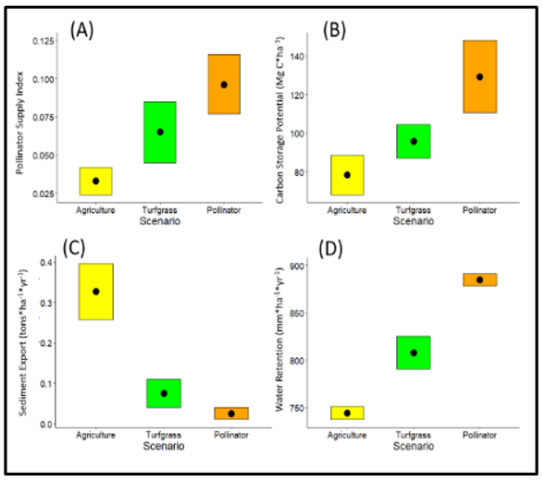
Assessment – These hard data and actual experience-based information offer counterpoints to the perspectives offered by the MCA and others.

- A small number of large and profitable farms control most of the farmland and generate a substantial proportion of the county's agricultural income, mostly through the sale of commodity crops and other commercial activities like sod farming and growing landscape plants.
- Current farm practices on these larger farms are generally net carbon producers; they can often deplete soil, requiring artificial fertilization, and in some cases actually remove topsoil.
  - In contrast, pollinator-friendly solar plantings actually sequester carbon, decrease erosion, and increase water retention, as well as increasing the number of pollinators

Comparison of row crop, turf, and pollinator-friendly plantings for pollinator supply, carbon storage, sediment loss, and water retention (NREL)



Compared to the agricultural land use, solar-pollinator habitat produced:

- 65% increase in carbon storage potential
- 3-fold increase in pollinator supply
- 95% reduction in sediment loss
- 19% reduction in water runoff

Average ecosystem service values for the thirty Midwest solar facilities modeled with InVEST: (A) pollinator supply, (B) carbon storage, (C) sediment export, and (D) water retention. Tiles represent the upper- and lower-bound estimates based on the 25% and 75% quartiles. Points represent the average values.

- On the other hand, a most farms are smaller and less profitable, with net income from farming being low or even negative – This is consistent with the current saying among midwestern farmers that "*Behind every successful farmer there's a spouse with a job in town*."
- The economic and demographic patterns suggest that there are numerous farmers who might benefit from the opportunity to lease part of their land for solar (with size limited to 2 MW, probably no more than about 15 acres).
- Despite the mis-impression that the Reserve is the breadbasket of the County, only a small fraction of total farmland (1.3%) is dedicated to fruits, vegetables, and other crops sold directly to consumers.

As noted by the Montgomery Countryside Alliance, the original purpose of the Agricultural Reserve was to "*preserve some of the county's historic farmland before it was swallowed up by residential and commercial development*.[2]" Residential and commercial development – not solar – are the main consumers of Maryland's farmland: between the 2012 and 2017 USDA Agricultural Censuses, the state lost over 20,000 acres of farmland. This loss was not caused by solar development – during that time, almost no ground-based solar was built in the state. And unlike solar - which, with the agricultural practices being required under the County's proposed ZTA, preserves and actually improves the land - residential and commercial development takes the land out of future farming use.

The Ag Reserve has in fact been successful in constraining growth in the County to the remaining two thirds of the County's land. However, this has contributed to the fact that many County residents live in multi-story apartments and condominiums - so they don't have rooftops to put solar on, even if they could afford it - or in densely settled neighborhoods where there is limited open space and many roofs can't have solar. This is where Community Solar comes in, as a balancing mechanism to provide large numbers of households the local low cost solar they couldn't otherwise have. But doing this

[2] Montgomery Countryside Alliance, "*History of the Ag Reserve*;" http://www.mocoalliance.org/history-of-the-ag-reserve.html

means solar projects that – although small by solar standards – are far too big to be built on any roof. So, allowing a small amount of Ag Reserve land for building Community Solar projects that presently can't be built in the County is compensation for the constraint the Reserve places on where County residents can live.