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SUSTAINABILITY



Maryland
Department of
the Environment

Energy Industry Revitalization Report Update

August 20, 2024

Preliminary results

Agenda

- Report framing and approach
- Energy Generating Facilities
 - Statutory requirement
 - Scenarios and facility data
 - Summary of preliminary results and next steps
- Small Businesses
 - Statutory requirement
 - Profile of Maryland small businesses
 - Scope of activities considered
 - Summary of preliminary results and next steps

Report Framing

- All-of-society approach to the energy transition where **no one is left behind**
- Energy facilities and small businesses are key partners in achieving the transition
- How can Maryland partner with energy facilities and small businesses to ensure an effective and just transition?
 - Positive and negative impacts are both considered - where will the transition create challenges and where will it create opportunities?

Energy Facility Statutory Requirements

Charge:

- (IV) An analysis that **identifies energy generating facilities that may close as a result of a transition to renewable energy**, including issues and opportunities related to repurposing the sites; and
- (V) An analysis that identifies or estimates, to the extent practicable:
 1. The **timing and location of facility closures and layoffs** in nonrenewable energy industries;
 2. The **impact of facility closures and layoffs** on affected workers, businesses, and communities; and
 3. **How the commission can most effectively respond to the impact** of facility closures and layoffs, including the potential to:
 - A. Compensate businesses that closed due to the effects of the transition to renewable energy; and
 - B. Incentivize businesses to transition to renewable energy through subsidies.

- Collected facility data and developed systematic assessment of key criteria
- Determined two scenarios for consideration
 - Current Policies
 - Climate Pollution Reduction Plan
- Continuing to collect data on impacts and reach out to specific facilities as case studies

Scenarios are based on achieving the existing RPS and proposed Clean Power Standard

Scenario	Policy Target
Current Policy - RPS	50% clean power by 2030
Climate Plan - 2035 CPS	100% clean power by 2035

Maryland is already close to achieving its Current Policies RPS

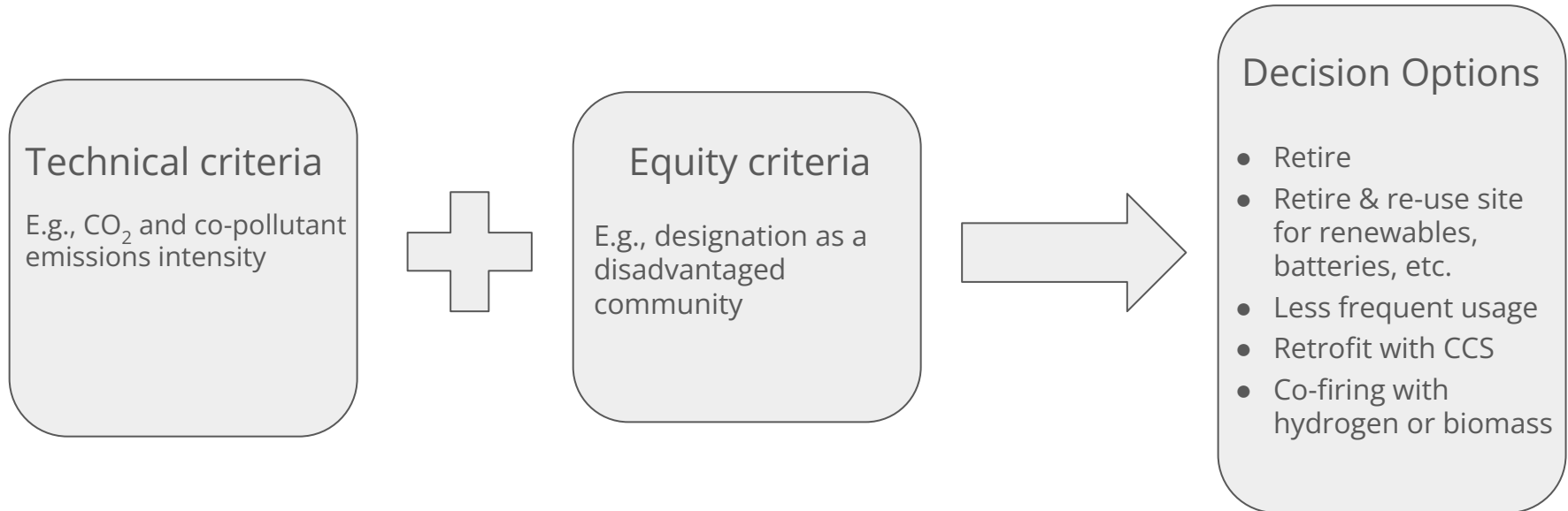
	# of facilities	MWh generation	% of state generation	# of jobs *
Coal	4 **	4,705,416	12.7%	1,634
Natural Gas	15	13,990,685	37.7%	2,004
Petroleum	9	26,051	0.1%	98
Fossil Total	28	18,722,152	50.5%	3,736
Biomass/Landfill	9	612,812	1.7%	480
Nuclear	1	14,810,684	39.9%	1,097
Hydro	2	1,779,682	4.8%	487
Solar	125	713,532	1.9%	6,865
Wind	5	497,608	1.3%	1,202
Clean Total	142	8,414,318	49.5%	10,131

* USEER employment numbers for solar include utility-scale solar, residential, and commercial installations, as well as the manufacturing, professional services, and wholesale trade

** multiple coal facilities have ended operations since this dataset was created. Updated data should be available later this year

Preliminary results

Energy Generating Facilities: Criteria for prioritizing upgrades or retirements



Criteria are scored 0-1, with low scores indicating candidates for retirement or other changes.

Energy Facility Evaluation Criteria

Criteria are scored 0-1, with low scores indicating candidates for retirement or other changes.

Criteria	Threshold	Source
Efficiency rate	1 if above the median of all plants	EPA e-grid
CO2 total tons of emissions	1 if below 400,000 tons	EPA e-grid
CO2 output rate	1 if below the median of all plants	EPA e-grid
NOx total tons of emissions	1 if below 150 tons	EPA e-grid
NOx output rate	1 if below 6 lb/MWh, 0.5 if between 6 and 17 lb/MWh	EPA e-grid
SO2 total tons of emissions	1 if below 150	EPA e-grid
SO2 output rate	1 if below 4 lb/MWh, 0.5 if between 4 and 25 lb/MWh	EPA e-grid
N2O total lbs of emissions	1 if below 10, 0.5 if between 10 and 13000	EPA e-grid
N2O output rate	1 if below the median of all plants	EPA e-grid
CH4 total lbs of emissions	1 if below 1000 lbs, 0.5 if between 1000 and 90,000 lbs	EPA e-grid
CH4 output rate	1 if below the median of all plants	EPA e-grid
PM2.5 emission rate	1 if equal to or below 3 lb/MWh	EPA power plants and communities
Plant has one or more generators suitable for dispatchable generation	1 (suitable) if `time from cold shutdown to full load` is 1hr or less	EIA Form 860
Co-generation facility	1 if Co-gen, 0 if not	EPA e-grid
Operates as a peaker plant	Nameplate capacity >10MW, capacity factor < 15%	EPA e-grid
Alternate job availability	The county economy type is non-specialized OR government	USDA county RUCC
Unemployment within a 3 mile radius	1 if below the National 50th percentile	USDA county RUCC
Disadvantaged Community	1 if community is not disadvantaged according to CEJST	CEEJ

Potential additional information to collect (second-wave criteria):

- Suitability for CCS retrofit
- Jobs lost as a result of the plant closing

Criteria we will mention narratively - no plant-specific data available:

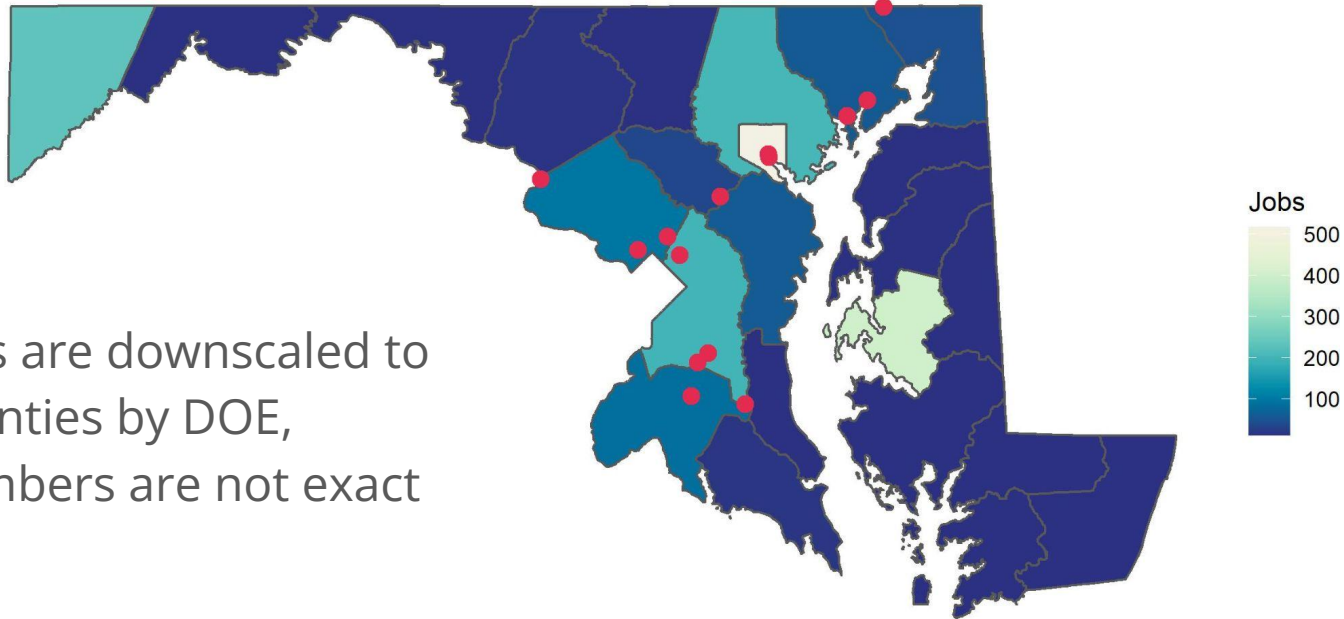
- Water impacts
- Jobs lost as a result of the plant closing
- Profitability
- Tax revenue for locality
- Grid stability impacts (covered more fully in JHU study)

Preliminary results

Energy Facilities Summary Table (priority plants)

Power Plant Rankings						
Ranking	Plant name	Fuel	Criteria evaluated	Criteria score	Annual Generation in 2022 (MWh)	Potential paths under RPS
21	Easton 2	OIL	18	11	5,308	
22	Perryman	GAS	18	11	329,794	
23	Wildcat Point Generation Facility	GAS	18	11	3,922,629	
24	Philadelphia	OIL	18	10.5	5,294	
25	Chalk Point	GAS	18	10	235,415	
26	NRG Chalk Point CT	OIL	18	10	429	
27	Smith Island	OIL	18	10	84	
28	Herbert A. Wagner	COAL/OIL	18	9.5	113,205	Shifted from coal to oil, planning to close
29	Morgantown	COAL/OIL	18	9	1,247,087	Shifted from coal to oil, planning to close
30	Wheelabrator Baltimore Refuse	BIOMASS (MSW)	16	8	218,645	
31	Montgomery County Resource Recovery	BIOMASS (MSW)	18	6	322,651	
32	AES Warrior Run	COAL	18	6	1,260,476	Closed June 2024
33	Brandon Shores	COAL	18	5	2,084,648	Closure by 2030

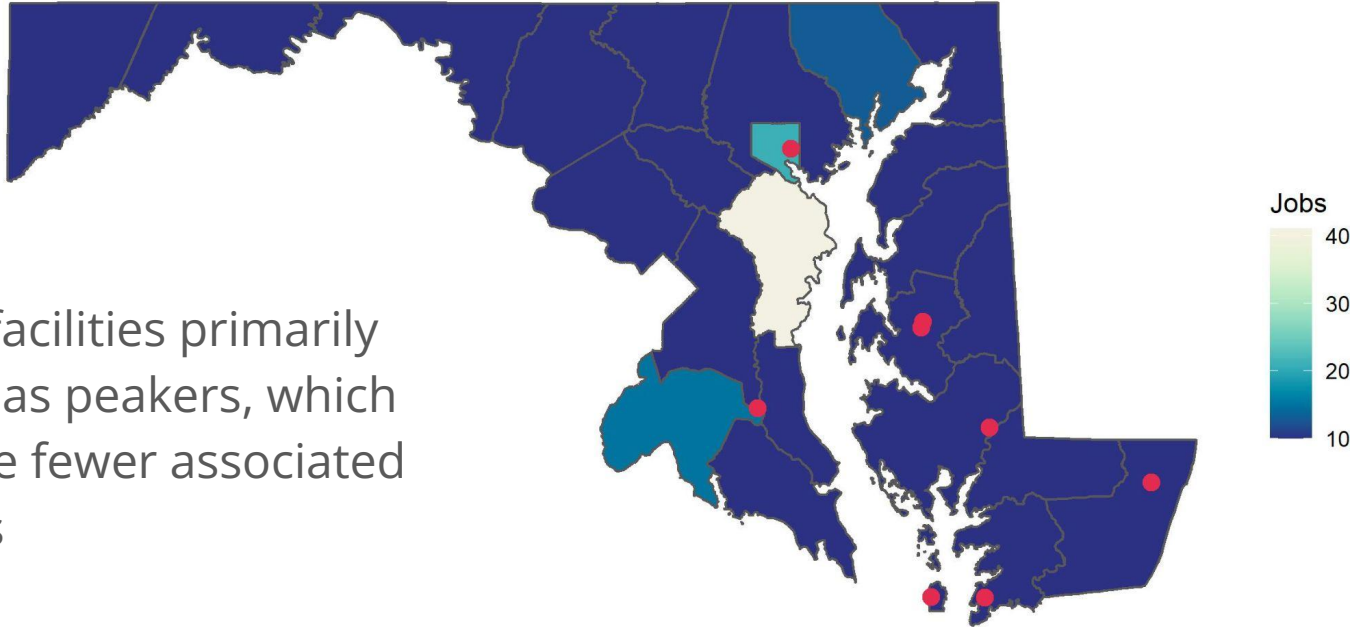
Natural Gas Facilities and Employment



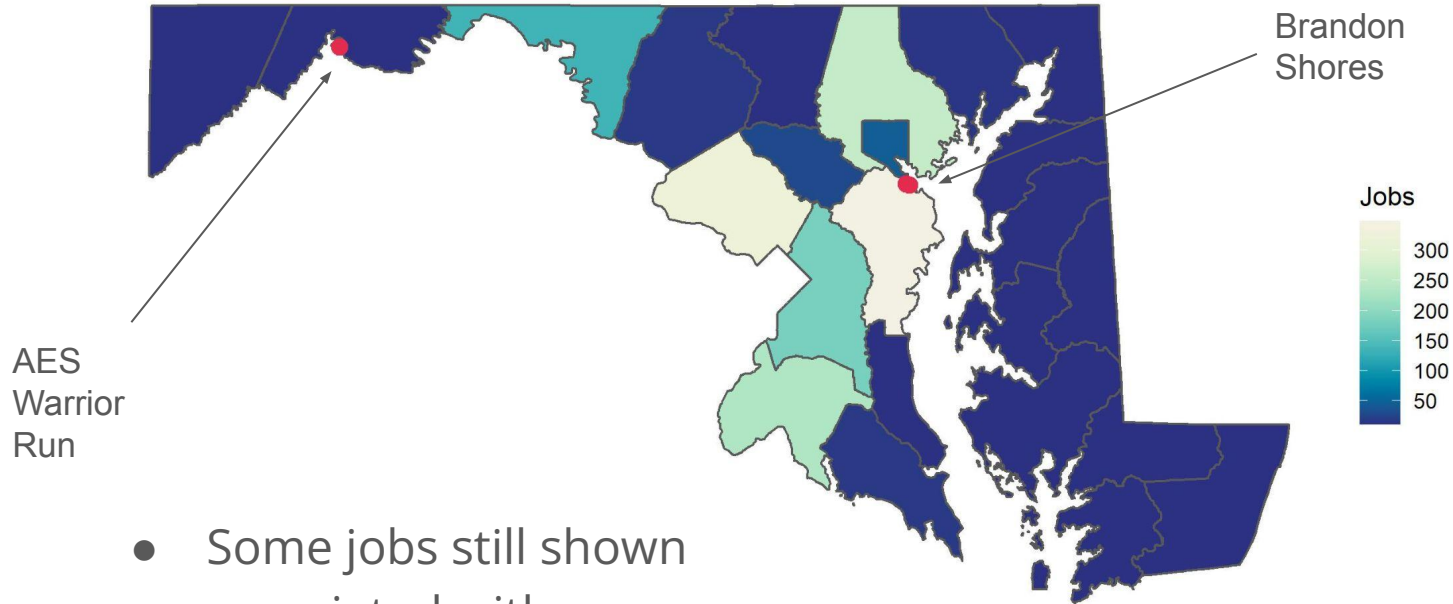
- Jobs are downscaled to counties by DOE, numbers are not exact

Oil Facilities and Employment

- Oil facilities primarily run as peakers, which have fewer associated jobs



Coal Facilities and Employment



- Some jobs still shown associated with now closed facilities

Energy Facilities - Next Steps

- Continue collecting data on facilities' additional criteria
- Reach out to a subset of plants to ask more detailed questions about closure planning and to fill in gaps in publicly available data:
 - Warrior Run (AES), Brandon Shores & Wagner (Talen), Calvert Cliffs, Wildcat Point
- Gathering information on existing policies/programs in MD and other jurisdictions that inform how to effectively respond to the impact of facility closures and layoffs

Energy Facilities - Potential Recommendations

- Must prioritize technical aspects to maintain reliability, but also equity
- Incentivizing re-use of facilities for renewables or energy storage can both provide stability for communities and support a more rapid transition
 - Also leverages existing transmission infrastructure, reducing need for upgrades
- Businesses, communities, and local governments can utilize IRA energy tax credits
- Identify funding sources to support programs that provide stability to communities transitioning away from fossil fuels such as community solar
 - E.g., RGGI SEIF, new legislature funding proposals, or others
- Develop financing mechanisms for CCS adoption and supporting infrastructure
- Engage with communities in decision-making around waste incineration in RPS
- Engage with PJM to establish processes for facility retrofits and upgrades

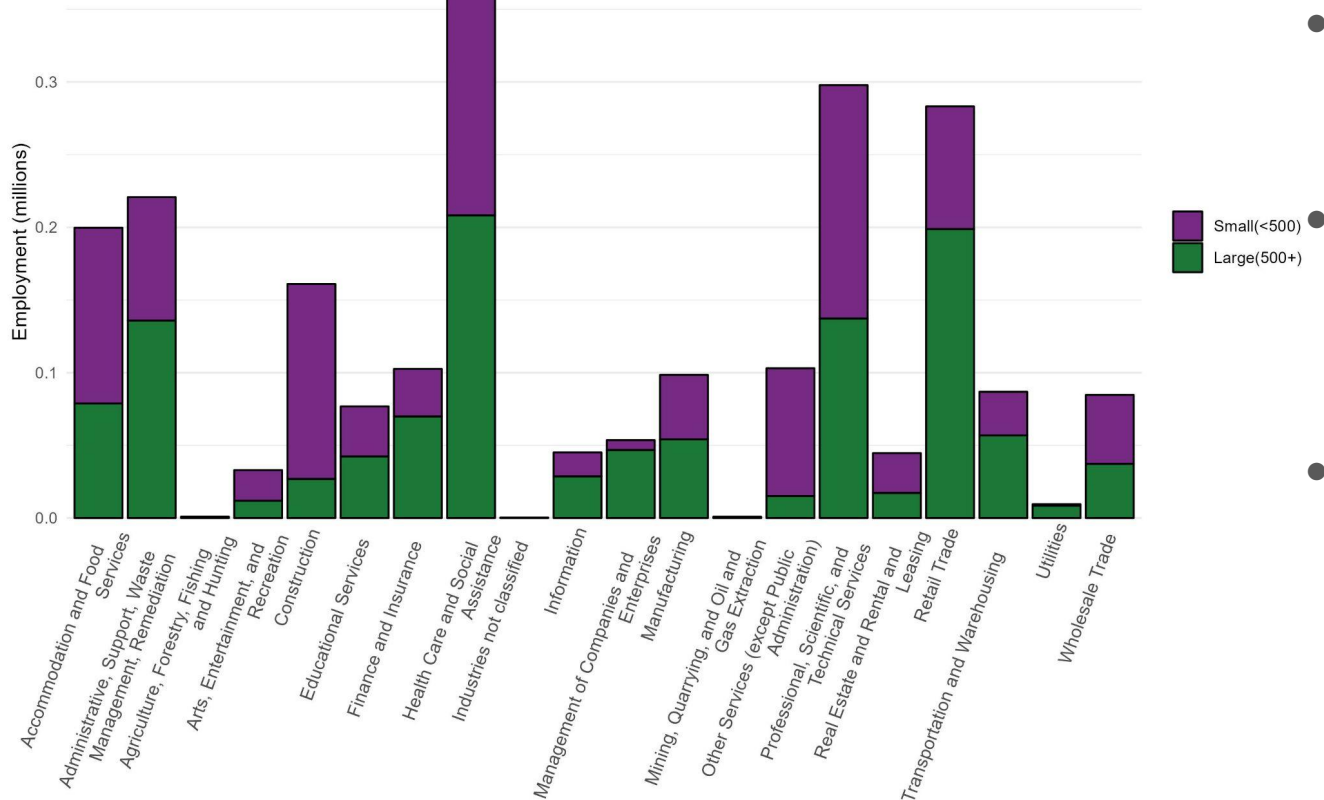
Small Businesses Statutory Requirements

Charge:

- (I) **The number of small businesses impacted** by the transition to renewable energy;
- (II) **The projected cost of transitioning existing small businesses** to renewable energy;
- (III) **The economic impact of the transition** to renewable energy and new energy sources, including supply chain impacts;

- Developed definitions of small businesses impacted by transition
- Used data from Bureau of Economic Analysis to determine industries with high energy usage
- Performed literature review on previous analyses of small business role in transition
- Gathered data on existing MD policies/programs that support small businesses or could adopt a small business focus (e.g., E2M2 program for manufacturers)

Small businesses account for 49% of Maryland employment

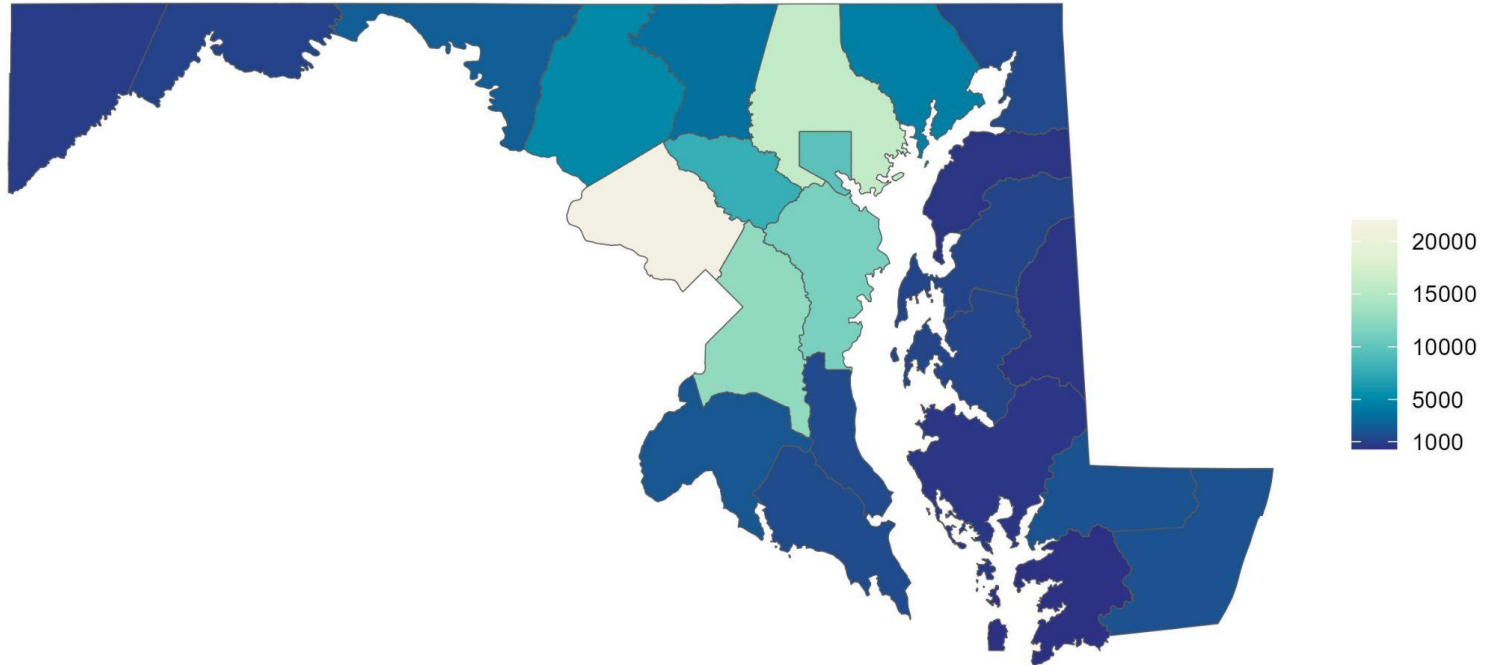


- Using SBA definition of a small business as having <500 employees
- Key industries such as construction are particularly dominated by small businesses
- Small businesses are less prevalent in sectors such as management, finance & insurance

Preliminary results

DC-Baltimore corridor dominates small business activity...

Maryland Small Business Firms by County

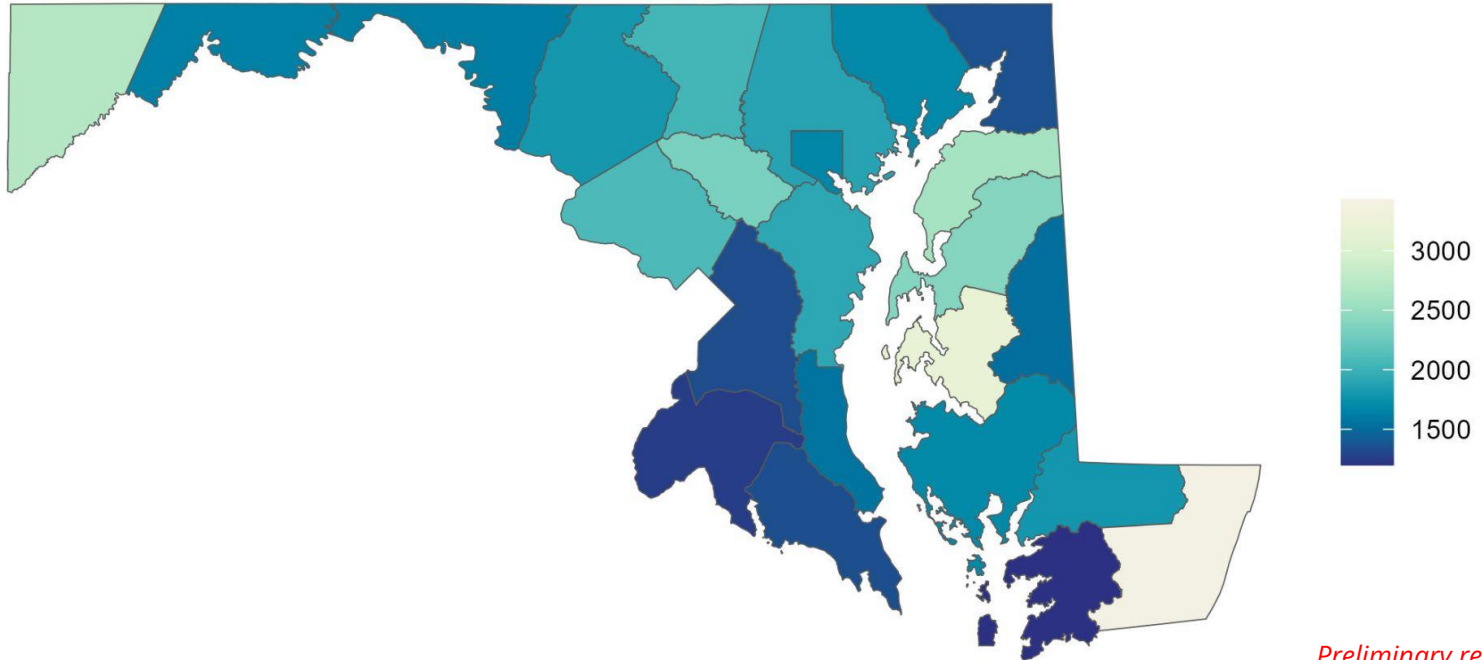


Preliminary results

Source: Census Bureau Statistics of US Businesses, 2021

...but high small business activity per capita in rural areas

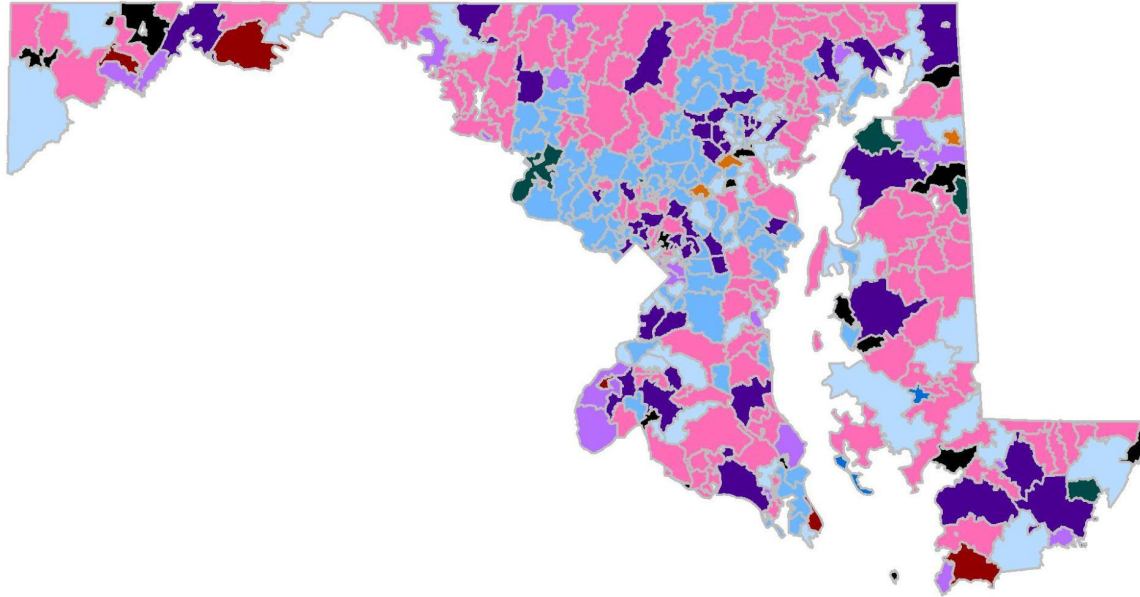
Number of Firms per 100,000 population



Preliminary results

Source: Source: Census Bureau Statistics of US Businesses, 2021
and County Population Totals, 2021

Most common small business activities vary across the state



- Construction is most common activity for many areas of the state
- Professional, scientific, and technical services are concentrated in DC-to-Baltimore corridor
- Retail trade dominates in some more rural areas

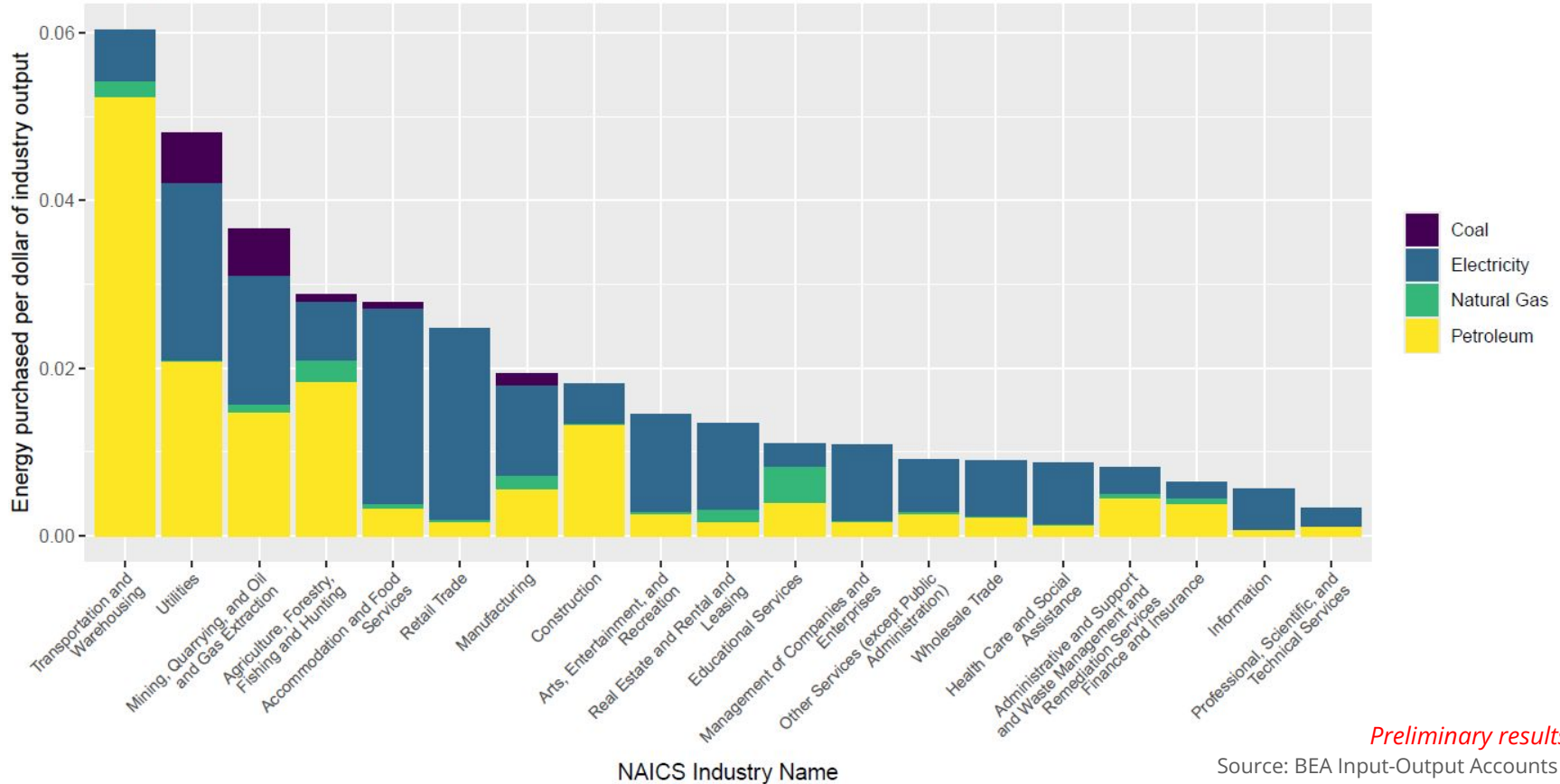
Preliminary results

Source: Census Bureau County Business Patterns, 2021

We identify three key categories of small businesses affected by the energy transition

- **Category 1:** Businesses involved in direct supply of energy
 - Potential challenges for fossil-based businesses, but opportunities for renewables
- **Category 2:** Businesses providing services to energy industry such as manufacturing technologies for the energy industry or installation of energy equipment.
 - High opportunity for growth through electrification
- **Category 3:** Businesses not already in categories 1 & 2 that are heavily energy-intensive
 - Opportunities to reduce energy costs through efficiency and electrification, but risks for businesses that are left reliant on fossil fuels
- **Not considered:** Businesses that may experience other less direct impacts, businesses that use fossil fuels as feedstocks, businesses strongly impacted by the effects of climate change such as the insurance industry.

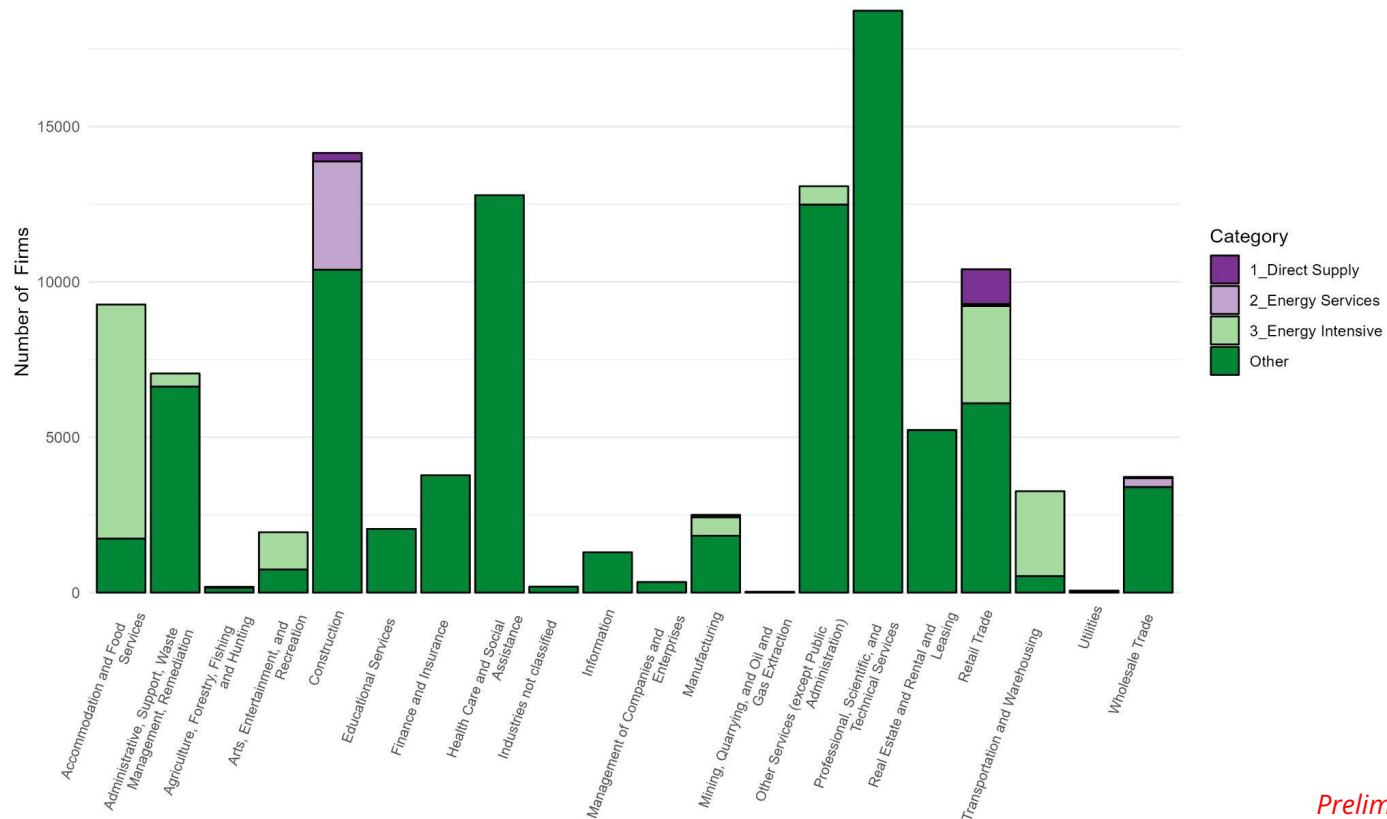
Determining Category 3 Energy-Intensive Industries



Preliminary results

Source: BEA Input-Output Accounts Data

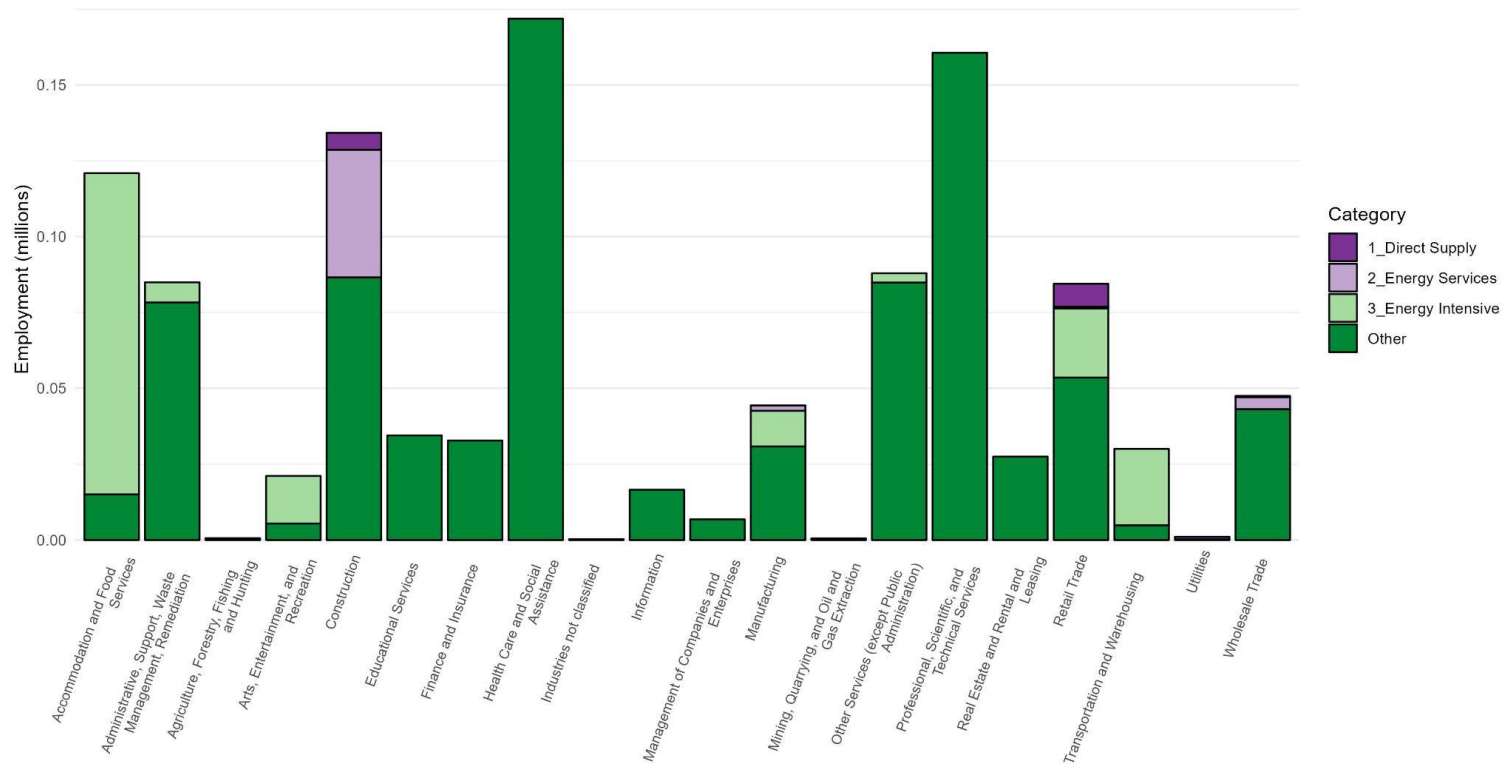
We identify 20% of small businesses as affected by the energy transition (21,666 firms)



Preliminary results

Source: Census Bureau Statistics of US Businesses, 2021

Affected small businesses have 254,431 employees, with jobs primarily in a few key industries



Preliminary results

Source: Census Bureau Statistics of US Businesses, 2021

Small Businesses - Next Steps

- Perform literature review of supply chain impacts
- Perform interviews with case study businesses, potentially:
 - Category 1: Gas station that has shifted to being solely an EV charging station
 - Category 2: Building equipment contractor working with Montgomery County to support electrification
 - Category 3: Catering company that has installed solar to power their kitchen

Small Businesses - Potential Recommendations

- Expand green bank-style funding to help with financing
- Create mechanisms for sustained engagement with the small business community to partner on the transition, providing easy access to information and support
 - Can also provide forum for collaboration between businesses to facilitate shared learning and buy-in
- Provide education to small business owners on how energy transition can save money, and available state resources to support capital investments
- Structure policies to allow participation by small businesses that rent space
- Make policies flexible so benefits can be accessed across a wide range of industries
- Support businesses in accessing federal incentives, particularly targeting high energy consumers for renewables and electrification



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