Virginia Solar Database

Last updated 3/4/2025

Project Vision

Provide an accessible, accurate, centralized, comprehensive, up-to-date source of large-scale solar facility siting and local permitting data to:

- Facilitate tracking projects across local, state, and interconnection permitting.

- Enable authentic community engagement by providing transparent and trusted information.

- Support informed, data-driven policymaking to further Virginia's adopted goals and policies.

- Enable monitoring of implementation of, and progress towards Virginia's adopted goals and policies.

- Provide foundational data to support complex analysis, research, and solar land use planning across the state.

Database Features

- Virginia Solar Dashboard, which features interactive graphs and data visualizations that summarize the state of local solar permitting in Virginia and an interactive map that illustrates permitting over time and contains pop-out content and permit information.

- Interactive project map with basic filters for project name, location, local permit status, and project size, contains a link to individual project information sheets that summarize verified data for each project.

- Online sortable data table and downloadable dataset (csv) that contains 32 datapoints that were chosen based on stakeholder input.

- Data Dictionary developed with stakeholder input.

- Unique Data ID is assigned to each project to allow linkage of local projects to state permits, interconnection, and operational information.

Criteria for Inclusion in the Database

The database is intended to provide an inventory of all large-scale solar projects proposed at the local level in Virginia that meet the following criteria:

- Project is over 1 MW (with the exception of BARC Community Solar Project in Bath County)

- Excludes school and government installations (with some exceptions for notable projects such as NASA Wallops, Oceana, and landfill projects such as Campostella).

  o Federal projects that didn't require local zoning action are coded with local project status of "by-right". Evidence of local actions that enabled or confirmed the use, such as signed development agreements or zoning determination letters, are recorded and the dates of these actions are used as date of local action.

- Project was advertised for a public hearing.

32 Datapoints

Unique Data ID
Locality
Virginia Region
Additional Localities
Project Name
Project Phases (name)
Alternative Project Names
Parent/Child Project (Data ID)
Previous Project (Data ID)
Owner/Developer at Local Action
Latest Nameplate Capacity per Local Action (Mwac)

Phase Capacity (Mwac)
Local Permit Status
Best Available Project Acreage
Location Description
Date- Final Action
Siting agreement Executed?
Date- Siting agreement executed
Siting agreement link
DEQ Permit Number
SCC Certificate Number

Shared solar program enrolled (Dominion)
AML Program or Funding?
Pollinator- Smart Certified?
Pollinator- Smart Stage of Development
Pollinator-Smart Scorecard
Energy Storage Onsite?
Energy Storage Capacity
PJM Queue #
EIA- Plant ID
EIA- Operating Status
EIA- Project Status

Data Collection and Validation

Began Winter 2023-

- VT, SolUnesco, Virginia Energy, Energy Right supplied UVA with their project records, which were reconciled and resulted in over 250 project leads.
- PJM, EIA, DEQ, SCC, Dominion project data was imported, evaluated, used to validate Virginia Solar Database records.
- UVA team members meticulously combed through online local archives, media sources, and other reliable sources such as project, utility, and interest group websites to find, vet, and validate projects.
- UVA reached out to localities, government agencies, and solar developers to find missing data and obtain verifications from reliable sources.
- To-date, UVA evaluated over 800 unique project leads.

Data is not available for every datapoint.

Project Plan

Due diligence, project inception, and project planning (Spring 2023)

Stakeholder survey (April- May 2023)

Datapoint prioritization, identify primary data sources, revise definitions (Fall 2023)

Design relational database and website; construct proof of concept (Winter 2023)

Build and launch webscraper for automated reports; proof of concept (Winter 2023- ongoing)

Data reconciliation and new data collection (Winter 2023-Summer 2024)

Data validation and calibration of definitions (Summer/Fall 2024)

Complete integration of database/website features, including Dashboard (Fall 2024)

Soft rollout; solicit funding for ongoing maintenance and release of full dataset (Fall 2024)

Public Rollout (11/4/2024)

Data analysis and website features, dashboard expansion (ongoing- requires funding commitment)

Maintenance and Updates (ongoing- requires funding commitment)

Project Team

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Many thanks to the contributions of our Winter Break '23-'24 undergraduate student research interns: Alex Schwartz, Nneoma Nosike, Tiffany Huyhn, Claire Lee, Olivia O'Donnell.

Background: Summary of Need

- 2022 Virginia Solar Survey confirmed the need for ongoing efforts to track and monitor local solar siting policy and permitting across the state.

- Factors like VCEA and record-breaking energy demand forecasts indicate that demand for solar will continue.

- Local permitting data is siloed to each individual locality; there (was) no centralized, comprehensive source of this data and no reliable mechanism for collecting it.

- Those tracking local permitting are using methods such as labor-intensive manual searches, google alerts, and word of mouth. The result is conflicting or incomplete datasets.

- There (was) no mechanism to track a project across local and state permitting and interconnection. Identifying information such as project name, megawattage, and developer/owner often changes, making it difficult to track a project from local permitting through state permitting.

Background:
Existing Sources of Solar Project Permit Data

DEQ- Provides NOI/Section 130/PBR data via an easily accessible spreadsheet linked from their site, and map. Each project is assigned a unique permit tracking number. Not all local projects submit NOI before they pursue local permitting and not projects all local projects move forward to DEQ.

SCC- NOI/CPCN data is hard to obtain and track, info is tracked via a docket number, or certificate number if one applies. SCC provides some consolidated reports to certain entities (not readily available to the public).

PJM- Interconnection data is publicly accessible. Since PJM queue is often the first step in permitting, the queue provides a list of the total universe of possible projects, but PJM reports interconnection location and not project, and cancelled or abandoned projects may stay on the list.

Dominion- Publishes IRP and summaries of their renewable project status (under development) and distribution, but these do not reveal local permitting status.

Background:
Source of Solar Project Permit Data, cont.

Virginia Solar Survey provided comprehensive, statewide point-in-time data from Aug 2021. Responses were aggregated to regional level; locality-specific data is not available.

Solar industry stakeholders- when asked, said they manually track local projects and use google alerts to learn of new projects, or, they pay for data but find it is based on state level PMJ or EIA data and do not reflect local permitting statuses.

Various other sources of permit data; however:

- geographically limited (e.g., Alliance for Shenandoah Valley, Charlotte Co.)

- focused on a single topic of interest (e.g., DCR Pollinator-Smart, SolUnesco decommissioning studies)

- websites do not provide consistent details on local permitting (e.g., solar developer websites)

Background: Project Inception

- In late 2022, UVA approached Virginia Energy, Virginia Tech, DEQ, and several solar developers to explore interest in developing a centralized solar database.

- UVA received positive feedback and began the process of initiating the Virginia Solar Database project.

Background:
Stakeholder Input

- In April 2023, UVA solicited input from a diverse group of over 20 stakeholders to learn which datapoints should be collected and which features and tools should be provided.

- Stakeholders were asked to rate the importance of 99 possible datapoints, provide input on associated datapoint definitions, and suggest reliable sources of the data. They were also asked to reflect on desired user experience and database tools and features.

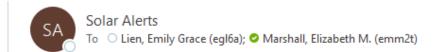- The responses were analyzed and used to prioritize our efforts.

Data Point	Min	Average	Sample Size	Median
Data ID	5.0	5.0	6	5
Nameplate Capacity (MW) Local Permit	5.0	5.0	5	5
Locality Name	4.0	4.8	6	5
(Parcel) Acreage	4.0	4.8	6	5
VDEQ-EDM_Permit MW (Nameplate Capac	3.0	4.6	5	5
Local Action Date	3.0	4.5	4	5
Local Permit Approval Date	3.0	4.5	4	5
Status	3.0	4.4	5	5
DEQ Project Status	3.0	4.4	5	5

Considerations

- Difficulty with standardizing definitions, response options, categorizing data
  - Incomplete (unavailable) data, variety of permitting processes
- Funding for ongoing maintenance? Where should this tool reside in the long run?
  - Adding local solar policy and DG data
  - Expand dashboard, include solar generation projections, GIS, live external resources
- Permitting laws may change
- SCC data is not easy to get or maintain
- PJM data maps to interconnection, not necessarily project site or locality
- Risks? Misinterpretation of nuanced data. How to optimize the design for the most accurate use of the data?

Maintaining the Database

- UVA developed a webscraping tool that scours county and city public hearing agendas and notices for solar related actions and new projects and creates a weekly report with alerts and links.
- Ongoing funding is needed to ensure resources can be dedicated and applied to ongoing maintenance and improvement of the database and dashboard.

Future Enhancements

Additional funding is needed to expand the data and tools offered, for example:

- UVA is collecting an additional 25+ datapoints that inventory local permitting details such as: application dates, planning commission dates and actions, board/council dates and actions, additional project attributes, permitted conditions, prior project details, RPS compliance and contribution to VCEA carveouts, permit amendment details, etc.
- A sophisticated geospatial mapping tool to allow advanced mapping analysis and visualizations and integration with external mapping resources.
- Expanded dashboard (include progress towards VCEA and policy targets, comparison to state permitting, interconnection, operational data, demand forecasts, etc.)
- Local zoning, policy, and decommissioning data.
- Revenue and community benefits summaries

Questions
or
To Support This Project,

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