



# Virginia Solar and Storage Database

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Last updated 1/14/2026

# Project Vision

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Provide an accessible, accurate, centralized, comprehensive, up-to-date source of large-scale solar and battery energy storage system (BESS) 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 progress towards** Virginia's adopted goals and policies.
- **Provide foundational data to support complex analysis**, research, and land use planning across the state.

# Database Features

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- **Interactive Solar and BESS Dashboards** that feature interactive graphs and data visualizations that summarize local solar and BESS permitting across Virginia.
- **Interactive Solar and BESS project maps** that contain pop-out content with project details. Project maps feature basic filters for project name, location, local permit status, and project size (for solar).
- **Downloadable dataset (.xlsx), split by Solar and BESS.** Overall project details for solar + storage projects are included in the solar database, while storage-specific details are included in the BESS database. Projects are linked between databases using their Data ID. The datapoints included were chosen based on stakeholder input.
- **Online sortable Solar and BESS data tables** that feature the most requested datapoints.
- **Data Dictionary-** developed with stakeholder input.
- **Unique Data ID** assigned to each project to allow linkage of local solar and BESS projects across to state permits, interconnection, and operational information.

# Criteria for Inclusion in the Solar Database

The solar 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 Rockbridge County)
- **Excludes school and government installations** (with some exceptions for notable projects such as NASA Wallops, Oceana, and landfill projects such as Campostella).
  - 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 or was by-right.**

# Criteria for Inclusion in the BESS Database

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

- **Is over 1 MW**
- For the purpose of this database, "proposed" is when any of these criteria are met:
  - **Formal application was submitted** for rezoning, special exception/CUP/SUP, siting agreement, and/or comprehensive plan conformance review;
  - **Public hearing held** to consider lease of public property for BESS;
  - **Project is by-right as a primary use or permitted as an accessory use.**
    - Evidence of local actions that enabled or confirmed the use, such as signed development agreements, lease agreements, or zoning determination letters are noted and the dates of these actions are used as date of local action.

Note: Preapplications and informational presentations in a public meeting are not considered active projects for the purpose of this database, and are therefore not included.

# Published Datapoints

\* = New datapoint for BESS only (1/14/26)  
*(Italics)* = Datapoint for solar only

Unique Data ID  
Locality  
Virginia Region  
Additional Localities  
Project Name  
Alternative Project Names  
Local Permit Status  
Owner/Developer at Local Action  
*Project Phases (name)*  
*Parent/Child Project (Data ID)*  
*Previous Project (Data ID)*  
*Latest Nameplate Capacity per Local Action (MW)*  
Phase Capacity (MW)  
BESS Project Capacity (MW)\*  
BESS Project Energy Capacity (MWh)\*  
BESS Project Duration (Hours)\*  
BESS Duration- Short (<10 MWh), Long (≥10MWh)\*

Best Available Project Acreage (Solar)  
Best Available Project Acreage (BESS)\*  
BESS Technology – Type\*  
BESS Technology- Chemistry\*  
Solar + Storage Project?\*Location Description  
Notes on Co-location/Use\*  
Date- Final Action  
*Date(s)- Local Permit Amendment*  
*Local Permit Amendment Description*  
Siting Agreement Executed?  
Date- Siting Agreement Action  
Siting Agreement Link  
DEQ Permit Number  
US Congressional Districts  
Virginia Senate Districts  
Virginia House of Representatives Districts

*Shared Solar Program- Enrolled*  
*Shared Solar Program Enrolled Date*  
*Mined Land*  
*Pollinator-Smart Certified?*  
*Pollinator-Smart Stage of Development*  
*Pollinator-Smart Scorecard (link)*  
*Pollinator- Smart Scorecard Name*  
*Energy Storage Onsite?*  
*Energy Storage Capacity (Solar)*  
*SCC Certificate Number*  
*SCC Docket Number*  
*SCC Year of Action*  
PJM Queue Number  
EIA- Plant ID  
EIA- Operating Status  
EIA- Project Status

# Datapoints

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**DEQ Permit Number** is sourced from DEQ's [Small Renewable Energy Permit-by-Rule \(PBR\) Status Report](#). DEQ updates their data regularly. The data included in our January 14, 2026 release is from DEQ dated January 12, 2025.

**EIA datapoints**, including **EIA- Plant ID**, **EIA- Operating Status**, and **EIA- Project Status** are sourced from EIA [Monthly](#) (current as of November 2025 ) and [Annual](#) data (current as of December 31, 2024).

**SCC** information is sourced from SCC dockets and is current through October 1, 2025..

# Solar Data Collection and Validation

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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 1000 unique solar project leads.

Data is not available for every datapoint.

# BESS Data Collection and Validation

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Began October 2025-

- Stakeholder input sought in order to prioritize datapoints, develop datapoint definitions, and understand user needs.
- PJM, EIA, DEQ, SCC, Dominion project data was imported, evaluated, used to build and validate Virginia BESS Database.
- 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 BESS developers to find missing data and obtain verifications from reliable sources.
- To-date, UVA evaluated over 90 unique project leads.

Data is not available for every datapoint.

# Solar Database Project Plan

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

Stakeholder survey and engagement (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 (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 (Fall 2024)

Public Rollout (11/4/2024)

 **Data updates, new projects (quarterly- requires additional funding)**

**Site maintenance, dashboard upgrades, datapoint expansion (ongoing-requires additional funding)**

# BESS Database Project Plan

Due diligence, project inception, and project planning (September 2025)

Update webscraper for automated reports (October 2025- ongoing)

Stakeholder survey and engagement (November- December 2025)

Datapoint prioritization, identify primary data sources, revise definitions (December 2025)

Design relational database and website changes (December 2025)

Data reconciliation and new data collection (December 2025- January 2026)

Data validation and calibration of definitions (January 2026)

Complete integration of database/website features, including Dashboard (January 2026)

 **Public Rollout (1/14/2026)**

Data updates, new projects, decision data, policy data (quarterly- requires additional funding)

Site maintenance, dashboard upgrades, datapoint expansion (ongoing-requires additional funding)

# Project Team

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Elizabeth Marshall, Senior Program Manager, Virginia Solar Initiative

Emily Lien, Academic Consultant for Data Science, Center for Economics and Policy Studies

Matthew Callen (2024-current), Undergraduate Research Assistant for Computer Science

Huyen "Tiffany" Huynh (2023- current), Undergraduate Research Assistant for Data Science

Previous Team Members:

Jaden Wang (2023- 2025), Associate Software Engineer

Katie Treene (2024- 2025), Research and Policy Analyst

Margaret Hance (2024), Undergraduate Research Assistant for Public Policy

Nadir Siddiqui (2023), Undergraduate Research Assistant for Data Science

# Background: Summary of Need

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- 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

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**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 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, as well as shared solar program information, but these do not reveal local permitting status.

# Background: Source of Solar Project Permit Data, cont.

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**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 and BESS 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

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- 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.
- In 2025, increased interest in BESS resulted in efforts to introduce BESS data to the database in January 2026.

# Background: Solar 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

# Background: BESS Stakeholder Input

- In November 2025, UVA solicited input from a diverse group of over 23 stakeholders to learn which datapoints should be collected and which features and tools should be provided.
- Stakeholders were asked to rate the importance of 81 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.
- 7 Stakeholder groups responses. Their responses were analyzed and used to prioritize our efforts.

Data Point	Min	Average	Sample Siz	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

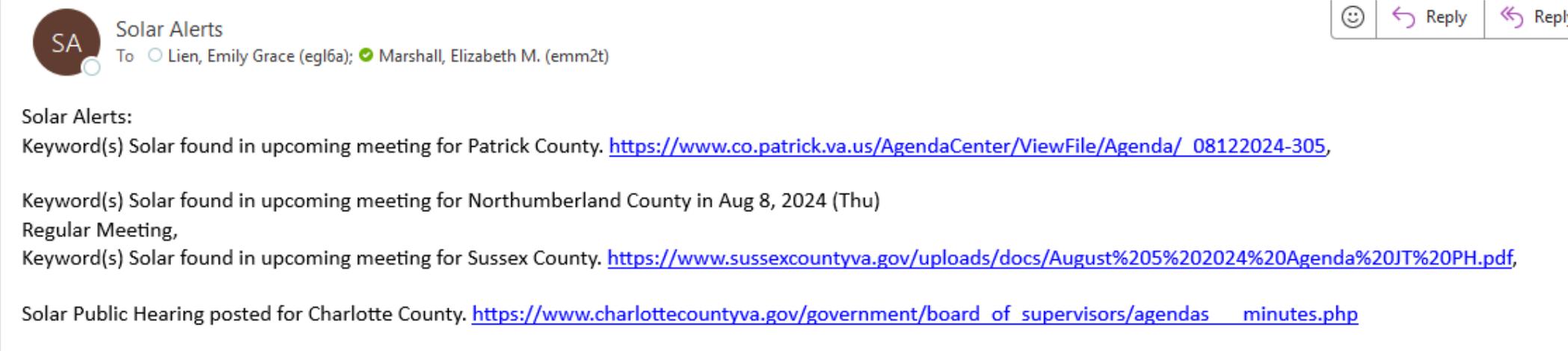
# Considerations

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- 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
- Adding battery energy storage system (BESS) data
- 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 and storage 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.



The screenshot shows an email interface. At the top left is a circular profile picture with the initials 'SA' and the name 'Solar Alerts'. Below the name, it says 'To' followed by two recipients: 'Lien, Emily Grace (egl6a)' and 'Marshall, Elizabeth M. (emm2t)'. On the top right, there are three icons: a smiley face, a single arrow pointing left labeled 'Reply', and a double arrow pointing left labeled 'Reply'. The main body of the email contains three paragraphs of text, each starting with 'Keyword(s) Solar found in upcoming meeting for...' followed by a URL. The first URL is for Patrick County, the second is for Northumberland County, and the third is for Sussex County. The final paragraph is about a public hearing in Charlotte County.

Solar Alerts  
To Lien, Emily Grace (egl6a); Marshall, Elizabeth M. (emm2t)

Solar Alerts:  
Keyword(s) Solar found in upcoming meeting for Patrick County. <https://www.co.patrick.va.us/AgendaCenter/ViewFile/Agenda/08122024-305>,

Keyword(s) Solar found in upcoming meeting for Northumberland County in Aug 8, 2024 (Thu)  
Regular Meeting,  
Keyword(s) Solar found in upcoming meeting for Sussex County. <https://www.sussexcountyva.gov/uploads/docs/August%205%202024%20Agenda%20JT%20PH.pdf>,

Solar Public Hearing posted for Charlotte County. [https://www.charlottecountyva.gov/government/board\\_of\\_supervisors/agendas\\_minutes.php](https://www.charlottecountyva.gov/government/board_of_supervisors/agendas_minutes.php)

# Future Enhancements

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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 (siting agreement) summaries

# Questions or To Support This Project

Email

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