Clean Energy Compass

Frequently Asked Questions

About the Clean Energy Compass

What is the Clean Energy Compass? The Clean Energy Compass is The Nature Conservancy's early planning resource for clean energy development. It combines an interactive map with the Compass Resource Hub, together which provide practical guidance to help users identify climate, conservation and community considerations—the 3Cs—early in the planning process.

By helping users consider potential opportunities and challenges early, the Compass can support more informed decision-making and help reduce the risk of conflicts, delays and unexpected impacts later in project development.

The Compass is **not** a siting tool, regulatory tool or certification program. It is designed to be used alongside input from state and federal wildlife agencies, site-specific studies, community engagement, Tribal consultation and state and local planning and review processes.

What is the Compass Resource Hub? The Compass Resource Hub is one part of the Clean Energy Compass tool. It contains practical information, tools and guidance related to community engagement, Tribal partnerships, conservation practices and responsible clean energy planning.

Why did TNC create the Clean Energy Compass? The United States will need significant amounts of new large-scale renewable energy to meet growing electricity demand and address climate change. Installing renewable energy on rooftops, parking lots and degraded lands should be a priority, but we cannot meet our clean energy goals without large-scale, ground-mounted projects. This is supported by our national Power of Place study. At the same time, clean energy development is becoming increasingly complex. The Clean Energy Compass was developed to help decision-makers identify climate, conservation and community considerations early in the planning process for utility-scale wind and solar projects, when projects are still flexible and risks can be minimized to create better outcomes for nature and people.

Is the Compass the tool formerly known as Site Renewables Right? Why was it renamed? Yes, the Clean Energy Compass is an evolution of the tool formerly known as Site Renewables Right. It was renamed because the Compass is **not** a siting tool, regulatory tool or certification program. It is designed to be used alongside input

from state and federal wildlife agencies, site-specific studies, community engagement, Tribal consultation, and state and local planning and review processes.

Calling it Site Renewables Right would be misleading. With the input from industry partners, potential tool users and TNC staff, a decision was made to rename the tool the Clean Energy Compass.

Who should use the Clean Energy Compass? The Compass is designed to inform clean energy decision-makers. This includes:

- Land use planners
- Permitting authorities
- Agencies
- Corporate buyers
- Economic development authorities
- Clean energy developers

How the Compass Should Be Used

Is the Clean Energy Compass a siting tool? No. The Compass does not evaluate key siting factors such as transmission availability, interconnection potential, solar and wind resources, landowner interest or engineering feasibility. It is designed to help users identify conservation and community considerations early in the planning process, not determine on its own where projects can or should be built.

Should the Clean Energy Compass be used on its own to make permitting or regulatory decisions? No. The Compass is an early screening tool designed to support clean energy planning and information gathering. It provides a national baseline of climate, conservation and community considerations. Additional assessment is needed to determine whether wildlife resources are present and whether potential impacts can be avoided, minimized or mitigated.

If the Compass *does not* display conservation or community data in an area, does that mean it is appropriate for clean energy development? No. The Clean Energy Compass is not designed to identify on its own where renewable energy projects can or should be developed. While it can help users identify areas with fewer mapped conservation and community sensitivities, it does not evaluate many of the factors needed to determine whether a site is suitable for development, such as wind and solar resources, proximity to transmission infrastructure, grid interconnection capacity, landowner interest or engineering feasibility. Even when sensitive conservation values are present, potential impacts can often be avoided, minimized or mitigated.

If the Compass *does* display conservation or community data in an area, does that mean it is not appropriate for clean energy development? No. If conservation or community data are present, the area may still be appropriate for clean energy development. The Compass is designed to highlight conservation and community considerations. It does not identify areas that should be excluded from development. Areas with conservation sensitivities may still support clean energy projects, but additional analysis, community engagement and mitigation measures may be warranted. TNC is committed to accelerating a clean energy transition and believes this is possible to achieve by considering nature and people from the outset of clean energy planning.

What is the relationship between Power of Place and the Clean Energy Compass? Power of Place and the Compass are rooted in the same goals of accelerating 3C clean energy while minimizing conservation and community tradeoffs, but they serve different purposes and complement one another.

Power of Place is a study that models potential national clean energy buildout scenarios and explores tradeoffs among conservation, cost, reliability and land use. The study demonstrates that we can decarbonize and, if we plan smart, can significantly reduce most, but not all conservation and community tradeoffs.

The Clean Energy Compass is an early planning resource that helps users identify 3C considerations when planning clean energy projects. It highlights where additional analysis, engagement and site-specific assessment may be warranted, but it should not be used on its own to determine project suitability or identify siting opportunities.

Can the Clean Energy Compass be used to help guide development of other technologies, such as transmission, data centers or geothermal facilities? The Clean Energy Compass is designed to provide information about climate, conservation and community considerations specific to clean energy development. Many of the conservation data layers are technology-specific, reflecting sensitivities that are relevant to onshore wind, onshore solar and floating solar projects. For example, bats are sensitive to wind development but not solar development, so bat-related data are only displayed in the wind component of the map.

As a result, the Compass should not be considered a comprehensive tool for other technologies such as transmission, data centers or geothermal facilities. However, some of the climate, conservation and community information may still offer useful insights into potential consideration that could be relevant during early planning and development of other technologies.

Data and Methodology

What is the difference between highly sensitive and moderately sensitive conservation values? Highly sensitive conservation values include wildlife, habitats and ecological systems, that TNC identifies as the highest priorities for minimizing conflict with wind and solar development. These datasets generally reflect areas with strong conservation significance, including protected lands, wetlands, biodiversity hotspots and habitat for particularly vulnerable species. Moderately sensitive conservation data provides additional ecological context that can inform siting decisions but may represent lower conservation priorities, greater uncertainty, broader habitat associations, or datasets with varying levels of spatial precision. These layers help identify potential concerns and opportunities for further review but are typically less definitive indicators of conservation conflict than the highly sensitive datasets.

It is important to note that the presence of highly or moderately sensitive conservation values does not necessarily preclude wind and solar development, as many impacts can be avoided, minimized or addressed through thoughtful project design, operations and mitigation measures. The Compass Resource Hub helps the user navigate these considerations. Learn more: www.nature.org/cleanenergycompass

Why are some states omitted from the tool? The conservation data for California, Georgia and Maine are not included, or only partially included, in the Clean Energy Compass. The Clean Energy Compass is designed to provide a consistent national baseline of conservation and community considerations, while complementing existing state resources and planning processes. In some states, established tools and datasets already support clean energy planning and decision-making. The Clean Energy Compass team evaluated state-specific circumstances and available resources when determining which datasets to include. As a result, the Clean Energy Compass directs users to existing state-level resources and processes for California, Georgia and Maine at this time.

Why do some states have different conservation data? The Compass uses a consistent set of national-scale datasets wherever possible. However, conservation attributes are very location specific. As a result, some states may have different datasets, additional resources or complementary tools that provide more detailed information. The Compass is intended to provide a national baseline and should be used alongside state and local data and expertise.

Can users download the data? Yes. The data included in the "Conservation values," "Disturbed lands" and "Agricultural considerations" portions of the tool are available to be downloaded in a .tiff format. Click the "Download Data" button at the top right of the mapping tool and you will be linked to a folder where these data layers are available to download at a national scale.

What's the difference between resolution, accuracy, and uncertainty? These three concepts are related, but they describe different aspects of a dataset.

- **Resolution** refers to the size of the map cells or pixels used to represent information. Most Clean Energy Compass layers are mapped at a 30 × 30-meter resolution, meaning the landscape is divided into relatively small areas that can capture local patterns and features. High resolution allows users to see finer spatial detail, but it does not automatically mean the conservation resource is uniformly present across the entire 30 x 30-pixel area. The data in the tool have high resolution, but their accuracy and certainty differ.
- **Accuracy** describes how well the data represent real-world conditions. Many Compass wildlife layers are built from known species observations, documented occurrences, telemetry records, surveys or habitat models developed from actual species presence data. For example, a mapped whooping crane stopover area or a bat roost location is based on real observations, giving confidence that the mapped feature reflects an actual conservation concern. Other conservation values are identified using habitat models based on the habitat conditions and landscape features that species are known to use, rather than direct observations at every location. Data derived from known species observations are more accurate than modeled data.
- However, **uncertainty** in conservation data still exists because natural systems change through time. A whooping crane observed at one location may not be there every day or every year. In other words, uncertainty reflects the limits of our knowledge about how species use the landscape across space and time, even when the underlying observations are accurate. All the data in the compass are of high resolution and different levels of accuracy. Site-level assessment is needed to address certainty.

A useful example is the bat layer. There are accurate records showing where bats were detected or where known roosts occur. However, because those records only document locations that were surveyed, they do not necessarily tell us where bats are likely to occur elsewhere on the landscape where surveys have not taken place. In this case, the data may have good resolution and high accuracy, but higher uncertainty when used to generalize beyond the observed locations. Conversely, the habitat suitability models used (in part) for the grouse layer may have greater uncertainty about any individual location but can provide broader insight into where a species is likely to occur across a region.

Why can't I zoom in closer? That is because the dataset you are viewing is presented at a 30 × 30-meter resolution. To reinforce this limitation, the zoom behavior is configured so that the user can only zoom to a neighborhood scale (zoom level 15), signaling that the information is not sufficiently detailed to support precise interpretation at that scale. This configuration also highlights the need for more fine-scale conservation data—such as datasets maintained by state wildlife agencies or our chapters—to inform siting decisions more accurately.

Questions About Specific Data Layers

What is the Biodiversity, Resilience, and Flow layer, and how does it differ from the original Resilient and Connected Network? The Biodiversity, Resilience, and Flow layer is a simplified version of The Nature Conservancy's Resilient and Connected Network (RCN), which identifies landscapes most likely to sustain biodiversity and ecological function in a changing climate by incorporating biodiversity value, climate resilience and ecological connectivity. In consultation with TNC's Center for Resilient Conservation Science, the Compass science team consolidated the original RCN classes into three categories: Resilient and Biodiverse Areas, Connectivity Pinch-Points, and Coastal Migration Space.

All classes containing recognized biodiversity values were grouped into the Resilient and Biodiverse category, while concentrated flow areas without recognized biodiversity value were retained as Connectivity Pinch-Points. These geographically constrained corridors are especially sensitive to fragmentation and can play a disproportionately important role in supporting species movement and climate adaptation.

TNC intentionally excluded diffuse flow classes without recognized biodiversity value. Although these areas can support wildlife movement across broad landscapes, connectivity is distributed across many potential pathways, making them less sensitive to localized development than concentrated flow corridors. In some regions, diffuse flow areas overlap with lands that may be well suited for renewable energy development, including previously disturbed landscapes, such as former mine lands.

How does the Compass address community and Tribal considerations? The Nature Conservancy worked in coordination with Indigenous energy experts and community experts to guide decisions about what, if any, geospatial data was appropriate to include in the tool, and how to relay information on best practices for engaging communities, Tribes and Indigenous Peoples, and sharing benefits equitably.

For the "Community considerations" component of the Compass, the tool displays climate, energy, health, housing, pollution, transportation, water and workforce indicators using U.S. Census Bureau data. These indicators can help a user understand some community characteristics but should also be paired with robust community engagement to fully understand a community's priorities. The Compass Resource Hub can connect the user to resources to learn more about these data and approaches to centering the community.

For the "Indigenous lands" component of the Compass, the default setting displays the boundaries of "Land Areas of Federally Recognized Tribes." These areas are greyed out to signal to the user that these areas are legally distinct. The tool includes a toggle switch that allows the data underlying the greyed-out areas to be displayed. This is the same approach that was used by TNC with the Resilient Land Mapping Tool, informed by feedback from Indigenous conservation experts. The Compass Resource Hub includes resources that connect the user to learning more about how to grow one's competency and capacity on tribal related topics, Indigenous Data Sovereignty and Tribal Benefit Agreements.

The "Indigenous lands" layer in the Clean Energy Compass is updated on an ongoing basis based on real-time feedback. We welcome input about how this layer is represented—especially where Tribes wish to adjust, refine, or remove reflected data. The Nature Conservancy can provide trainings on the use of the Compass to Indigenous energy experts and planners. Inquiries and feedback about this part of the tool should be directed to maya.batres@tnc.org.

Does the Compass include both federal and state recognized Tribes? The Compass displays locations of the Federally Recognized Tribal entities in the contiguous U.S. (National Geospatial Data Asset data from the U.S.

Census Bureau) to acknowledge Tribal Nations' sovereignty status and jurisdiction. The data layer includes American Indian Reservations and Federally Recognized Tribal Entitles, as identified by the BIA, as well as other Tribal lands, including off-reservation trust lands, allotted lands, and Oklahoma Tribal Statistical Areas, Tribal Designated Statistical Areas, and State-Designated Tribal Statistical Areas.

This layer was selected based on a year-long process of listening to Indigenous energy experts across the country about what information would be appropriate to include in the tool, especially in the context of data sovereignty. The layer is intentionally greyed out when the map is opened to signal that respecting and upholding Tribal sovereignty, self-determination and authority to manage land, resources and data is the baseline for any responsible use of spatial information. The layer can be turned off so that Tribes and Indigenous People can access the information.

In addition to these layers, users should be aware of several additional resources reflecting Tribal land interests including:

- BIA Branch of Geospatial Support
- ESRI GIS Sources for Native American Tribal Governments
- U.S. Forest Service's "Tribal Lands Ceded to the United States" dataset
- Native-Land.ca

How do I interpret the Probability of Renewable Energy Buildout layers? These layers should be interpreted as areas where interest from clean energy developers may be higher, relative to surrounding areas. The data are based on clean energy development patterns from the past 20 years. Areas with higher probability have characteristics that have historically been more attractive for renewable energy development. For example, they may have access to transmission infrastructure, are close to sources of electricity demand, have favorable land characteristics and fewer environmental constraints.

These layers are not a forecast of where clean energy will be built. Areas with lower values may still be developed, and areas with higher values may never be developed.

How does the Compass address farmland and opportunities presented by agrivoltaics? The Compass team engaged American Farmland Trust (AFT) and TNC's North America Agriculture Team to advise on what farmland data to include in the tool. AFT provided a map of the highest quality farm and ranchland (top 50% in each state based on productivity, versatility, and resiliency [PVR] values). Agrivoltaics (co-location of solar and agriculture) and wind development on agricultural land may offer opportunities to maintain agricultural uses while supporting renewable energy generation (Smart Solar Principles), depending on local conditions and project design. PVR data are based on soil productivity and capacity, land cover and use, crop type, and length of the growing season (Farms Under Threat 2020). As with sensitive wildlife habitat, potential impacts to high-quality agricultural lands can often be avoided, minimized or mitigated.

The Compass also displays surface and groundwater-limited lands to convey that future water shortages may occur and make farming infeasible, such that solar development may be appropriate in these areas. If designed intentionally, renewable energy projects can reduce water use, improve soil stability and promote ecosystem recovery over time.

Why is "abandoned farmland" included in the Disturbed Land category? The American Farmland Trust recommended displaying abandoned farmland data, which comes from a peer reviewed publication. The layer identifies croplands that were abandoned or unused between 1986-2018 for greater than 5 years. The 5-year

threshold is used to prevent inclusion of lands that are simply fallow for one or a few years. It is assumed that after 5 years, these lands have been fallowed because they are marginal for food production. As with all the data in the Clean Energy Compass, it should not be used in isolation to make decisions. Further ground-truthing and consultation with experts is important. For example, land identified as abandoned farmland may be susceptible to erosion, which may limit its suitability for renewable energy.