

THINKING DIFFERENTLY ABOUT ENERGY DEVELOPMENT

A Balanced Approach

Credit: Carolyn Nored Miller



Respect Big Bend

Funding for this project was provided by:



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A Balanced Approach

A report from the Respect Big Bend Coalition with support from
Texas' Tri-County Stakeholder Advisory Group

May 2021



Respect Big Bend

FOREWORD

The Cynthia and George Mitchell Foundation (CGMF) is a philanthropic organization focused on fundamental change in complex systems critical to achieving a sustainable society. The foundation's programs promote clean energy, land protection, water conservation and shale sustainability. These interrelated resource issues pose challenging inconsistencies and demand trade-offs in a rigorous analysis of optimal energy systems. Is the relatively poor energy density (the unit of land needed to produce a unit of energy) of renewables worth the carbon savings from displacing coal or natural gas? Are the water savings from wind and solar development worth the loss of land and soil resources? How do you balance the jobs created today by the shale industry with the threat of climate change tomorrow? These questions are a good reminder that there are no impact-free energy resources.

The hypothesis we investigated in this project has its origins in a CGMF collaboration with the the Aspen Institute's Energy and Environment Program. Together we convened subject matter experts to develop recommendations to improve the regulatory context for managing risk in the governance of oil and gas development from shale resources, particularly through enhanced stakeholder engagement practices. Over the course of the Aspen Institute collaboration, growing renewables and shale development in the Big Bend Region afforded us a real world opportunity to test the new governance approach.

Besides growing up in the Permian Basin, the Big Bend holds profound personal meaning for me. I grew concerned about the impacts of development on the habitat and beauty of the area while reading news articles about major new renewables projects and shale discoveries slated for development.



I believe there is a better way for energy development to happen – in West Texas and beyond. It can be done in a way that engages and protects communities and natural resources.



This is how Respect Big Bend came to be. The goals are simple: protect, mitigate, restore and set a precedent, creating a model for energy development that transcends the status quo.

- Where energy development is minimal, before many leases have been signed, we would work to establish a process that gives landowners and community members a voice in protecting their communities, land and water resources.
- Where leases have already been signed, we would work with landowners and the energy industry to mitigate the impact of energy development on the communities, land and water of the region.
- Where energy development has already taken hold, we would work with landowners and the energy industry – both fossil and renewables developers – to establish high standards for the restoration and enhancement of communities and land impacted by energy development.
- Last, and maybe most important for the future of Texas and other undeveloped areas, we would document our effort, both achievements and setbacks, so that others will benefit from what we learn in the greater Big Bend Region.

Understanding the potential impact on landowners, scarce water resources and small communities, we set out on a project to engage stakeholders and empower local communities to conserve what matters most to them, whatever that might be.

The major outputs from the Respect Big Bend program include novel ecological asset mapping techniques and energy forecasts, values-based recommendations from local stakeholders and a framework for encouraging low-impact energy development. Together these outputs clarify and improve the chances for responsible energy development that protects regional ecosystem and cultural values today and in the future.

I am both personally and, as a representative of the Cynthia and George Mitchell Foundation, professionally delighted to have supported the Respect Big Bend project and resulting report. Taken together, these endeavors provide useful insights to those interested in continuing to improve the performance of energy development of any type anywhere, especially regarding habitat and community protection.

I thank all those involved for their valuable input throughout this process and look forward to utilizing this report as a valuable resource.

MARILU HASTINGS
Chief Innovation Officer
Cynthia and George Mitchell Foundation

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OVERVIEW



Respect Big Bend (RBB) is a project launched by the Cynthia and George Mitchell Foundation in 2019 to convene scientists, landowners, community members, conservation organizations and energy industry members to develop a blueprint for conserving the unique resources and iconic communities of the Big Bend Region of Texas. The process we deployed can serve as a model for any community anticipating future energy development.

Our goal is to ensure that decisions about energy development in the region are made while considering the potential impacts of development on the values that local communities hold dear. This would allow appropriate steps to be taken to minimize negative impacts and encourages responsible development.

To facilitate local community input, RBB convened a Stakeholder Advisory Group consisting of landowners and community members from Brewster, Jeff Davis and Presidio counties (also known as the Tri-County region), and they developed a set of conservation values for their home counties. At the same time, RBB scientists analyzed information to estimate the impacts energy development could have on the land and communities across the Trans-Pecos, an 18-county study area that includes the Tri-County Region.

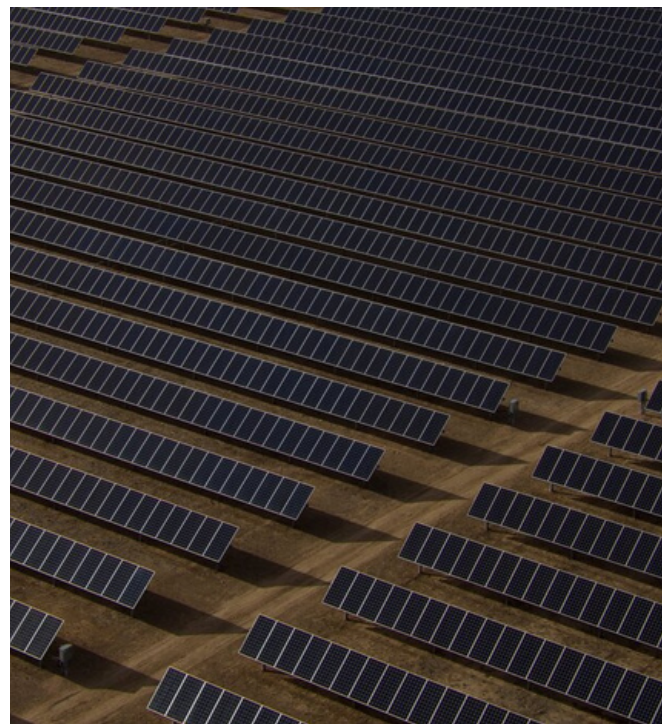
The result of the RBB project is a science-based, decision framework that maps the values of the Stakeholder Advisory Group to the landscape. The tool can be used to guide future development decisions, as well as identify priorities for long-term conservation and restoration.

Findings From the Respect Big Bend Process

- Within the 18-county study area, the Tri-County contains the highest concentration of high-quality, intact landscapes with resources that members of the Stakeholder Advisory Group highly value.
- Renewable energy sources have a footprint on the landscape that is more expansive than oil and gas but have fewer impacts on water and air quality. Because renewable sources have considerable flexibility with respect to siting, and there are large areas in the Tri-county region with characteristics suitable for renewable development, it should be possible to site the facilities in a way that minimizes or avoids impacting conservation values.
- The Stakeholder Advisory Group found the RBB landscape-scale decision framework to be a useful tool that could be used by stakeholders in other parts of Texas.



Credit: Carolyn Nored Miller



A technical report that details the research results and methodologies is available on the Respect Big Bend website: <https://respectbigbend.org/technical-report>

THE CHALLENGE

What lies west of the Pecos River is iconic Texas.

The area is vast and rugged with big horizons, beautiful sunsets, dark skies, bright stars and fiercely independent towns with unique charm.

Springs, streams, creeks and ciénegas scattered throughout – life sustaining resources for people, plants and animals in this arid landscape.



Varied terrain ranging from the Davis Mountains to expansive grasslands that typify the Chihuahuan Desert, the most biodiverse desert in the Western hemisphere.



Beautiful, unobstructed sunsets and some of the darkest skies in the nation – which support the McDonald Observatory, one of the premier astronomical observatories in the world.

Agricultural operations that provide food and support the state's economy.



Credit: Vicki Leblanc

Independent-minded communities, including Alpine, Marfa and Fort Davis



Businesses that rely on the variety of visitors who travel to Far West Texas from around the world.



Credit: Texas Parks & Wildlife Department

A robust tourism industry that attracts hundreds of thousands of visitors – such as outdoor enthusiasts, birders, hunters and cultural travelers – to the region each year.

The Big Bend Region is adjacent to one of the most energy-intensive places on the planet.

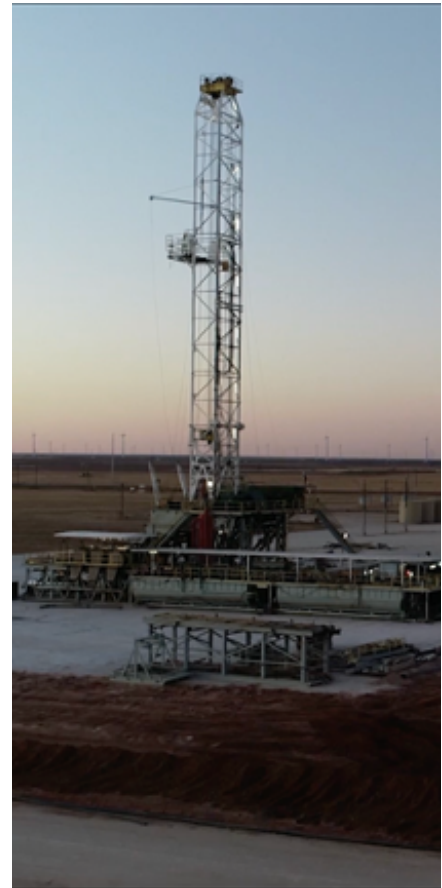
Texas is the energy capital of the United States, and it continues to capitalize on growing demands for energy at home and around the world.

Texas has long been associated with oil and gas development, and the Trans-Pecos region is adjacent to the Permian Basin, one of the most prolific oil and gas plays in the world.

Texas is also a leading producer of wind power, and today, the Trans-Pecos'

abundant sunshine and wind make the area attractive for wind and solar development. The energy industry benefits the state by providing jobs to Texans, income to landowners and tax revenue to the government.

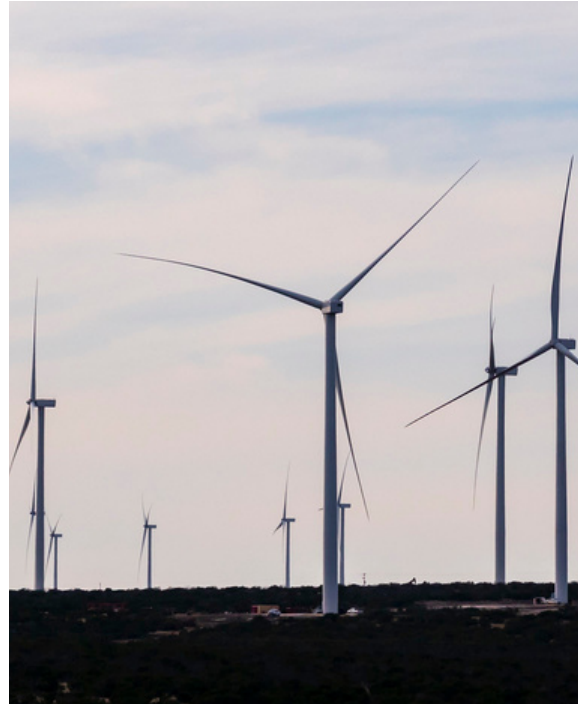
But there is a downside. The development of energy here threatens to compromise the unique natural and cultural resources of the Big Bend Region.



How do we develop the energy we need without damaging the way of life and natural resources of the Big Bend Region for future generations?

The challenge for this project was to help stakeholders navigate the tradeoffs between developing energy resources and conserving all that is wonderful about the Big Bend Region.

The tradeoffs between energy development and conserving the natural resources is especially challenging in Texas, where 95 percent of the land is privately owned. Decisions about energy development in Texas are made by private landowners and energy companies, in a state with few regulatory requirements to govern the siting of new energy facilities.



THE PUBLIC'S PERSPECTIVE

Even though they are outside of negotiations for new energy developments, people in local communities are impacted by it – in both good ways and bad.

In the fall of 2017, in the midst of an oil and gas boom in West Texas that appeared likely to lead to drilling near the Big Bend Region, the Cynthia & George Mitchell Foundation (CGMF) set out to assess how residents there, and Texans more broadly, think about these impacts.

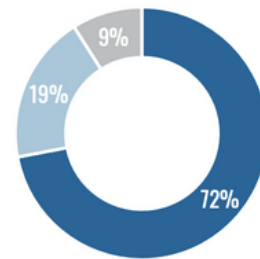
The foundation commissioned focus groups with residents of Alpine, Fort Davis and Pecos – towns of varied distance from active drilling – to gauge awareness and perceptions of potential energy development. A statewide public opinion survey followed to measure attitudes about the Big Bend Region and energy development broadly.

The results of this research led the foundation to embark on a public engagement process in the Tri-County region that could serve as a test case for the approach.

Research Findings

- A majority of Texans think energy development is good for the state, but, like Far West Texas residents, they do not want it to take place just anywhere. When asked to choose, most Texans prioritized protecting communities and land and water resources for future generations over energy development.
- People are skeptical that energy can be produced without harming communities and natural resources.
- Eighty-one percent of Texans believe that cities and towns should have greater input when energy development is likely to have an impact on their own communities and quality of life.

Which of these statements do you agree with more?



- We should protect communities and land and water resources in Far West Texas, even if it means limiting energy production there
- We should develop energy supplies even if it means communities and land and water resources of Far West Texas suffer as a result
- Equally/neither/unsure (volunteered)

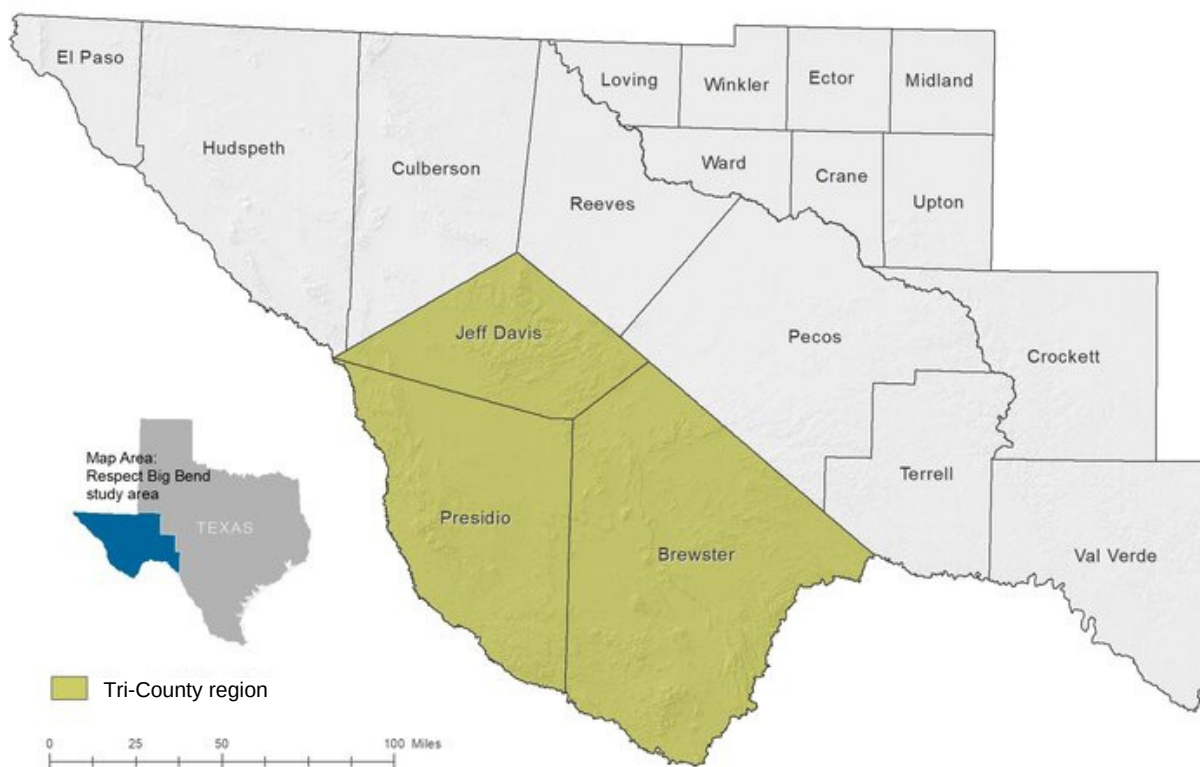
THE PROCESS

Respect Big Bend (RBB) launched in 2019. It began by bringing together a coalition of experts in law, policy and natural sciences – representing conservation organizations, academic institutions and consulting firms – to facilitate an evidence-based approach.

The Respect Big Bend Coalition then launched a community-driven process in the Tri-County region to inform and guide future development and conservation decision-making. This effort included two parallel workstreams.

Respect Big Bend's Mission:

To inspire and empower stakeholders to conserve the unique resources and protect the iconic communities of the Big Bend Region of Texas while developing energy responsibly.



1. Convening a Stakeholder Advisory Group (SAG)

The SAG is made up of 17 people who have a stake in the Tri-County region. The group includes land and mineral rights owners, local government officials, energy industry representatives, conservationists and community members – all have deep knowledge of the area, local laws and policies and a view on the feasibility of different conservation and restoration strategies. The Respect Big Bend Coalition and SAG also received extensive input from oil and gas and renewable energy representatives, Texans by Nature and conservation organizations.

Using the Development by Design framework, these stakeholders articulated their values and developed a shared vision for the future of the Tri-County region (detailed in the next section). Then, based on projections of future energy development prepared by RBB Coalition researchers, the SAG developed recommendations intended to mitigate potential impacts of that development on the land and natural resources.

The Stakeholder Advisory Group met bi-monthly over the course of two years to review findings, discuss and shape their conservation vision for the Tri-County. The results of their work are outlined later in this report.

Stakeholder Advisory Group Members

Terry Bishop	Farmer/Rancher, Presidio County
Eleazar Cano	Judge, Brewster County
Craig Carter	Rancher, Brewster County
Krysta Demere	West Texas Diversity Biologist, Texas Parks and Wildlife Department
Leo Dominguez	VP University & Student Services, Sul Ross State University
Michael Janis	Wildlife District Leader, Texas Parks and Wildlife Department
Rainer Judd	President, Judd Foundation
John Karges	Associate Director of Field Science, The Nature Conservancy – Texas (Retired)
Michael Logan	Community Member, Fort Davis
Albert Miller	Rancher, Jeff Davis and Presidio Counties
Mo Morrow	Rancher, Brewster County
Robert Potts	President and CEO, Dixon Water Foundation
Janna Stubbs	Rancher, Brewster County
Jan Woodward	Community Member, Alpine

SAG Advisors

Castlen Kennedy, Fay Walker	Apache Corporation
Jesse Wood	ConocoPhillips
Colin Meehan	First Solar
Gina Eddy, Emily Jolly, Kristian Koellner	Lower Colorado River Authority
Jamie Gentile	NextEra Energy Resources
Constance Wyman, Rebecca Zerwas, David Smithson, Therese Harris	Public Utility Commission/ Electric Reliability Council of Texas
Representative	Rio Grande Joint Venture
Charlie Hemmeline	Texas Solar Power Association
Matt Gilhousen	Wind Energy Consultant

2. Engaging the Community

The Respect Big Bend Coalition also led online and offline outreach efforts to inform and engage community members and interested parties across the state. The RBB Coalition brought these outside perspectives back to the Stakeholder Advisory Group for their consideration.

In-person work in the Tri-County region consisted of a community seminar series, an elected officials' luncheon, conservation partner brown-bag lunches and dozens of presentations to local community groups.

Online, the Coalition cultivated a community of nearly 32,000 Facebook followers, 700 Instagram followers and 1,100 email newsletter subscribers. These platforms were used to share news and research about the Big Bend Region and capture people's feedback.

RBB Coalition members also shared details about the project with elected officials in Austin, as well as energy companies and trade associations across the state.

RESULTS

Outcomes of Development by Design in the Tri-County Region

Development by Design is a strategic process that communities can use to evaluate the impacts of future energy development on nature and their way of life. The Stakeholder Advisory Group used this process to develop recommendations on how best to balance conservation goals and energy development in the Tri-County region.



Step 1 – Conservation Values

Develop a conservation vision that captures what people value and want to preserve in their community, way of life and natural resources.

The Stakeholder Advisory Group identified HISTORIC RANCHING HERITAGE as the defining feature that supports the other important values of the Tri-County region. Vast, intact properties contribute to the area's scenic vistas, dark skies, clean water, wildlife corridors and other unique traits.

The conservation values identified by the SAG are:

Ranching heritage and private property rights

These characteristics shape the culture and economy of the Tri-County region. Many of the ranches established in the late 1800s and early 1900s still exist today. Keeping these working lands intact is important to the community, because they produce food, provide large intact habitat for wildlife and support ecological processes, including water filtration, carbon sequestration and dust control.

Vistas, dark skies, remoteness and quietness

Cumulatively, the Tri-County region encompasses over 12,000 square miles, an area larger than the state of Maryland, but only about 18,000 residents call the area home.

This makes it one of the least populated expanses of land in the United States. The resulting vistas, remoteness and quietude make it a destination for those who want to escape crowds and noise and view nature in all its splendor.

Despite increasing industrial activity nearby, the area still boasts some of the darkest skies in North America.

Sky islands, water resources and grasslands

The diverse topography that characterizes the Tri-County region makes it one of the most unique and varied ecological areas in the United States. With desert scrub, grasslands and sky islands, the area supports a diverse biological community, all of which rely on scarce water resources.

Tourism and hunting

The Tri-County region abounds with outdoor adventure opportunities. Ecotourism has become an important economic driver in the region, supporting businesses and providing employment for many of the residents of the area. In addition to camping, hiking and birding, hunting has become a source of revenue for both landowners and local businesses.

Community, safety and quality of life

The unique character of small West Texas towns attracts residents and visitors alike. Smaller communities like Marathon, Terlingua and Valentine, along with the slightly larger towns of Alpine, Fort Davis, Marfa and Presidio provide vital services, gathering places and a distinctive quality of life.

Culture, music and the arts

The Tri-County region boasts a strong appreciation of music and arts. The mesmerizing landscapes of the region have captured the attention of artists for decades. Most famously, Donald Judd moved to Marfa in the 1970s, catalyzing the transformation of the sleepy little town into a premier art destination. But galleries and events celebrating the arts are commonplace in other area communities too, as is live music of all genres.

Wildlife and migratory corridors

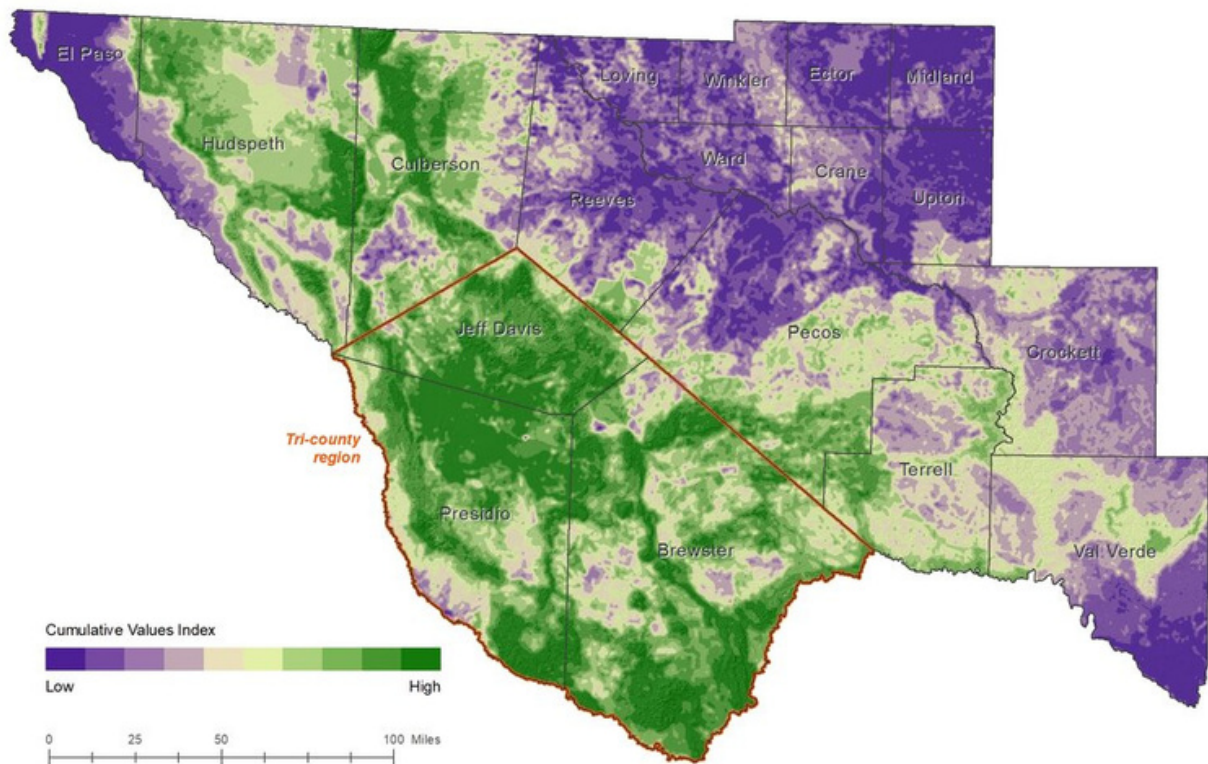
The Trans-Pecos supports over 500 species of birds, some 170 species of reptiles and amphibians and more than 120 species of mammals. Many of those species are found in the Tri-County region. The region is also home to several iconic species, such as pronghorn, bighorn sheep and black bear, which rely on healthy, intact and connected corridors for their survival.

Step 2 – Mapping

Map the values to the landscape using an interactive, visual tool.

RBB scientists took the values identified by the Stakeholder Advisory Group and depicted them on the landscape to highlight areas of greatest value. While the SAG members came from the Tri-County region, the RBB team developed spatial map layers to show the concentration of values across the 18-county study region in Far West Texas.

Areas where values overlapped – because they represent multiple important features – are places where development should be avoided. In addition, some areas that contained only one or two features were highlighted, because they represent unique or irreplaceable features.



Cumulative Values map based on Stakeholder Advisory Group recommendations. This map represents aggregations across the larger 18-county study area of values identified primarily for the Tri-County Region.

*For more information about how this map was developed, see the technical report at:
<https://respectbigbend.org/3-a-conservation-vision-in-the-context-of-future-energy-development>*

Step 3 – Energy Projections

Project future energy development by exploring where and why it is occurring today, and estimating where, how much and what types of development may occur in the future.

RBB scientists estimated future energy development patterns to determine the likelihood that oil and gas, solar and/or wind development would occur at a particular location sometime in the next 30 years. The analysis involved for each energy source included:

- mapping existing energy-related infrastructure, excluding areas that will not be developed (e.g., cities, roads, already-developed areas);
- evaluating the energy resource potential (i.e., wind speed, reservoir quality, solar radiance and slope);
- projecting the amount of energy production under different scenarios;

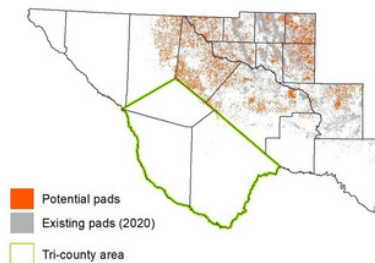
- estimating the location of new production facilities, based on certain criteria.

Modeling provided future estimates of both solar and wind generation measured in gigawatts (GW) for each ERCOT region and ultimately for each county in Texas.

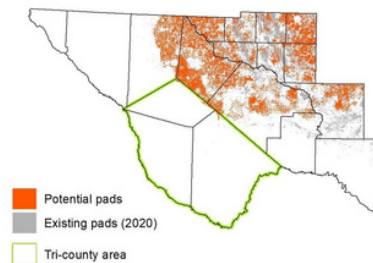
RBB scientists met with representatives of the oil and gas, wind and solar industries to discuss and solicit comments on the methodology and findings.

For more information about how the projections were developed, see the technical report at: <https://respectbigbend.org/3-a-conservation-vision-in-the-context-of-future-energy-development>

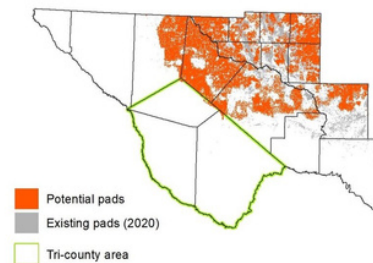
(A1) Low alteration scenario (Oil & gas)



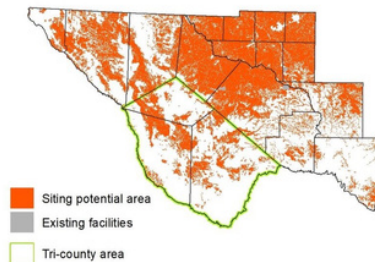
(A2) Medium alteration scenario (Oil & gas)



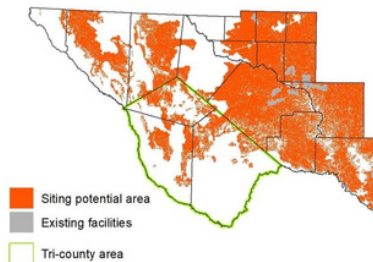
(A3) High alteration scenario (Oil & gas)



(B) Suitable area (Solar)



(C) Suitable area (Wind)



Low, Medium and High land alteration scenarios for oil and gas development (A1-A3) and suitable lands for potential siting of solar (B) and wind (C) development.

Step 4 – Estimated Landscape Impacts of Energy Development

Estimate the impacts of current and projected future development on the landscape and consider those impacts in the context of community-based priorities.

Oil and gas

There is little oil and gas development expected in the Tri-County area between now and 2050 because of the geology of the region. In the 18-county study area, forecasts for development were highest in Pecos, Culberson and Midland Counties. In those counties, most of the projected development is expected to impact areas that show up on the map as low conservation value. However, 25 percent of the forecasted development would impact areas with high conservation values.

Renewables

Scientists also evaluated the siting potential for wind and solar facilities across the 18-county study area. In the Tri-County region, there are potential development sites in areas that are classified as of high conservation value.

Outside the Tri-County region, areas of high conservation value could also be impacted in Culberson, Hudspeth, Pecos, Reeves and Terrell Counties. However, there are large expanses of suitable development sites for wind and solar that are of lesser conservation value.

Note that this research did not focus on air and water impacts associated with oil and gas development; rather, it focused on the impacts to land that occur when an oil and gas play is developed or a wind or solar facility is built.

Step 5 – Mitigating the Impacts of Energy Development

Identify opportunities to guide development in a way to avoid or minimize potential impacts to important values in the landscape and to prioritize areas for restoration action.

Data and information, like that developed in the Tri-County area, can be used to identify resources and areas that should be prioritized for conservation.

Our research projected only a small amount of new oil and gas development in the Tri-County region. However, there is land that is suitable for wind and solar development. If future development of any kind is considered (energy related or not), the information generated through the RBB process can be used to enhance planning efforts for new development. The use of the decision framework would ensure mitigation of development impacts to the areas identified by the community as having the greatest conservation value.

The ability to manage and mitigate siting impacts will vary by energy type.

Wind and solar development require a lot of land per unit of energy produced, but compared with oil and gas production, there is considerably more flexibility when it comes to siting new infrastructure. This means it is possible to select sites for renewable energy facilities with relatively low conservation value. In fact, we found that between 4 and 32 times the amount of suitable land is available to meet projected renewable energy targets.

In contrast, oil and gas development requires a much smaller footprint, but there are limited options for where new wells can be placed – infrastructure needs to lie above oil and gas reserves. This means it is more difficult for operators to avoid areas of high value, but they can minimize surface impacts by using single pads for multiple wells and carefully positioning those pads.

RECOMMENDATIONS

Based on their experience with this engagement process in the Tri-County region, the SAG has developed the following recommendations to address future energy development across the Big Bend Region.

Obtain stakeholder input to avoid negative impacts of energy development.

The RBB project is a useful model for engaging stakeholders to identify the resources and attributes that local communities value – in short, a conservation vision. The conservation vision can be used by energy companies and individual landowners when planning new developments to avoid impacts to areas of high value and to identify priority areas for restoration. The RBB landscape framework can be used in other parts of West Texas by stakeholder groups that represent their counties. The RBB process could be replicated in other areas of Texas (or other locations considered for energy development) to ensure that the potential negative impacts of energy development are minimized.



Establish a center for landowner and community resources.

We recommend establishing a regional Center for Land Stewardship and Community Engagement at the Borderlands Research Institute at Sul Ross State University. This center would serve to provide technical resources and function as a conservation convener for community members, landowners and energy operators in Far West Texas. The center would also help ensure the long-term viability and functionality of the Respect Big Bend initiative.

The mission of this entity would be to serve as a resource for land management and conservation activities and ensure that landowners, community members and energy operators have access to the landscape framework created by RBB.



Support programs to keep large tracts of land intact, to preserve the values that they provide to all the citizens of the state.

Large, intact working lands are critical for maintaining most of the recognized values of the region. Initiatives and incentives that minimize fragmentation, encourage conservation and enhance productivity would assist private landowners challenged by droughts, volatile agricultural markets and estate taxes, and reduce the pressure to develop their lands. To be attractive to landowners, programs should be designed to protect private property rights and be administered transparently.



Restore land disturbed by energy development.

The natural resource values of the land should be restored by energy operators to their original condition as rapidly as possible after disturbance. Doing so would reduce water pollution and wind erosion, restore habitat and improve Texas' ranching and hunting heritage, as well as the lands' environmental health. To maximize the benefits of large-scale restoration efforts funded with government dollars and/or private investment, the efforts should be guided by the values identified through the RBB project and targeted at locations where those values would be enhanced.



THE RESPECT BIG BEND COALITION

The Respect Big Bend Coalition includes Big Bend organizations, statewide groups with projects in West Texas and a variety of scientific experts. We share a commitment to the future of far West Texas.

We are dedicated to collaborating with communities and landowners to maximize the benefits of responsible energy development while sustaining the communities, land and water of the Big Bend region.

The coalition was established by the Cynthia and George Mitchell Foundation, a Texas foundation that supports projects at the nexus of environmental protection, social equity and economic vibrancy.

Partner Organizations



CONSERVING THE LAST FRONTIER



BUREAU OF
ECONOMIC
GEOLOGY



ACKNOWLEDGEMENTS

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Respect Big Bend

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