



What is **Conservation Biomass?**

The Earth Partners is harnessing “Conservation Biomass” as a land restoration and sustainable energy solution.

The Earth Partners (TEP) is a land restoration and bioenergy company with a mission to rehabilitate millions of acres of marginal and degraded land in the United States and at the same time supply large scale, sustainable renewable energy resources. Removing invasive and encroaching woody brush on historical grasslands and fostering native perennial grasses on degraded agricultural areas are two of TEP's strategies for recovering Conservation Biomass and achieving our mission.



Removing
encroaching
woody brush

**Two Land
Restoration
Models**

Fostering
perennial
native grasses



Over 40 million acres

of marginal and degraded land in Texas, New Mexico,
and Louisiana alone have been screened and meet
TEP's basic feasibility criteria for Conservation Biomass.

The benefits of Conservation Biomass

Conservation Biomass is an energy source that can be recovered in an ecologically sustainable way and that can have tangible benefits for the land.

Responsible brush removal from historical grasslands in the Southwest can:

- Improve plant diversity and wildlife habitat
- Reduce soil erosion
- Have the potential to improve soil carbon
- Improve water quality and retention
- Reduce wildfire risks
- Improve forage production

Fostering native grasses on fallow agricultural land can:

- Have the potential to improve soil carbon
- Reduce soil erosion
- Improve water quality and water infiltration
- Put otherwise unproductive land into use

TEP is then utilizing brush and grass Conservation Biomass, as a waste product of land restoration treatment, in energy sector end uses like wood pellets for the power sector and liquid biofuels. Sourced only from marginal and degraded land, Conservation Biomass is a low-carbon, sustainable energy source. This feedstock:

- Avoids competition with food production, forest products, or other productive land use
- Minimizes indirect land use change emissions, the biggest challenge to sustainable bioenergy use
- For brush removal treatments, requires no or low agricultural inputs and irrigation
- Creates the potential for environmental assets like soil carbon, water, and habitat

This "Best in Class" environmental profile creates certainty for stakeholders, buyers, and investors that Conservation Biomass can comply with current and future biomass sustainability guidelines. See page 4 for TEP's ecological principles that guide our approach.

To date, land restoration activities have depended heavily on tax-payer dollars. Four USDA programs, the Environmental Quality Incentives Program (EQIP), the Wildlife Habitat Protection Program (WHIP), the Farm and Ranchlands Protection Program (FRPP), and the Grassland Reserve Program (GRP), were funded by Congress at nearly \$15 billion since 2002, with up to an additional \$15 billion over 2014-2018.¹ Texas has allocated over \$100 million state dollars to brush removal alone over the past decade, and New Mexico supports similar programs.² The Earth Partners are promoting a solution that can use private finance to complement and scale up public efforts.

What is marginal and degraded land?

- Land with poor or vulnerable soils and hydrology, with high rates of erosion
- Land with low agricultural value and depleted productivity, potentially as a result of intense over-use
- Land that is underutilized or has low ecological value, including areas that are flood-prone, desertified, or subject to pollution
- Examples include historical grasslands invaded with brush, floodplains, diseased forests, mined lands, and saline lands

¹USDA ERS, 2010, The Farm Act's Regional Equity Provision; USDA ERS, 2014, Agricultural Act of 2014: Highlights and Implications.

² Texas State Soil and Water Conservation Board, State Brush Control Plan, 2009; USDA NRCS Texas office, compiled data, 2013



How does The Earth Partners' Conservation Biomass model work?

The Earth Partners has overcome previous challenges to scaling this approach by working in close partnership with landowners and undertaking a two-step land restoration and biomass recovery process that creates significant local value.

The Earth Partners' proprietary process for bringing Conservation Biomass to market includes:

1. Screening large areas of land through TEP's economic criteria for biomass recovery, including density of standing biomass, capacity for soil carbon improvement, potential for native grass yield, logistics and transport infrastructure, and any needed agricultural inputs.
2. Once target areas are identified, working with land owners and other stakeholders to understand land management preferences and ecosystem dynamics. This allows TEP to develop a regional strategy for landowner engagement and sustainability guidelines.
3. Bringing interested landowners under long-term contract for land restoration treatment, either through encroaching biomass removal or planting perennial grasses. TEP develops a site-specific management plan in close consultation with the landowner, based on sustainability guidelines.
4. Signing long-term offtake agreements with utilities and other energy sector partners to provide reliable financing. TEP's in-house expertise provides design, engineering, and management oversight of new-build bioenergy processing infrastructure, such as pelleting plants and transportation infrastructure.

To date, TEP has enrolled landowners representing over 700,000 acres and nearly three million tons of biomass. Ultimately, biomass potential in TEP's two primary areas have the capacity to reach over 100 million tons of encroaching and invasive woody brush and 50 million tons from our perennial grass restoration projects over the next 25 years. TEP has completed inventory on 40 million acres of prospective biomass in Texas, New Mexico, and Louisiana which has the potential to deliver highly competitive, fixed-cost feedstock.

Leading operating partners: Applied Ecological Services and Brinkman & Associates



TEP was formed out of a joint venture between two organizations with decades of experience with ecosystem restoration. Applied Ecological Services (AES) is one of the leading broad-based ecological consulting, contracting, and restoration firms in the world since 1975. Specific areas of ecological expertise include wetland, grassland, savanna, and forest sciences.

With a billion trees planted, Brinkman & Associates is the largest reforestation and forest ecosystem restoration company in the world. Since 1970, Brinkman's team of over 1,000 practitioners has restored over a million hectares.

Both Brinkman and AES continue to provide staffing, guidance, and day-to-day involvement in TEP's operations.

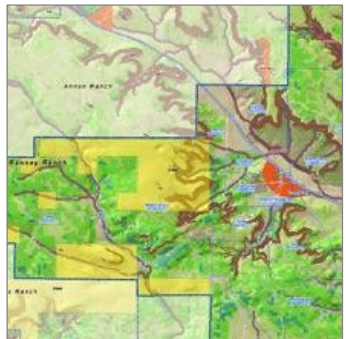
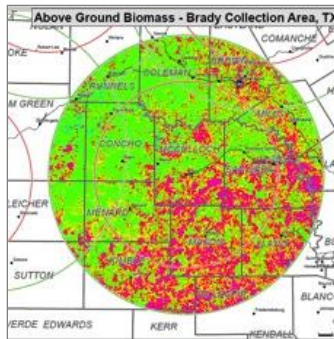
Endorsed by key stakeholders

The Conservation Biomass approach has been endorsed by a variety of stakeholders, including USDA's Natural Resource Conservation Service, Texas Wildlife Association, Texas Department of Agriculture, and the Texas State Soil & Water Conservation Board. The Intergovernmental Panel on Climate Change (IPCC) recommended biomass recovery from marginal and degraded land to reduce land use change emissions in its Special Report on Renewable Energy Sources.

Showcase Conservation Biomass Projects	
U.S. Southwest Rangeland Restoration Program	Louisiana Switchgrass Plantations
 <p>Nearly 40 million acres of natural grassland, pasture, and rangeland in New Mexico and up to 100 million acres in Texas have over the past century become densely covered with invasive juniper brush, mesquite, and other species. TEP is completing a program in New Mexico and Texas to screen brush-infested rangeland, develop restoration and harvest practices, bring 100,000s of acres under long-term contract for brush removal, and develop TEP- owned and -operated bioenergy facilities, which can each accommodate up to 500,000 metric dry tons of biomass annually. The bioenergy product is then shipped to market, whether to the power or to the liquid biofuels sectors, to meet growing demand in the U.S. and Europe for sustainable bioenergy.</p>	 <p>Coastal prairie historically covered 2.5 million acres in Louisiana, and has been reduced to below 500 acres, largely converted to agricultural land. TEP is designing programs to rehabilitate the ecosystem services of Louisiana coastal prairies by establishing switchgrass and diverse native grass plantations on idle pasture land, marginally productive or fallow lands, fields over-run with invasive Chinese Tallow trees, and agricultural areas damaged by salt water intrusion and storm surges. End use applications for this feedstock, including bioliquid and pelleting facilities, are under development with key technology and energy partners.</p>



Examples of TEP's proprietary screening approach and land management plans, based on decades of ecological and GIS expertise



Ecological Restoration Principles

The Earth Partners follow a set of ecological principles to ensure that any interaction with the land is undertaken in a sustainable way.

In any land restoration process, we work with landowners to incorporate their long-term land use goals and strategies to promote ecosystem development towards robust, stable, diverse communities.

These principles strongly align with the many emerging sustainability schemes required by renewable energy regulators and encouraged by civil society stakeholders.

Our Ecological Restoration Principles

- Develop a landscape level restoration approach that acknowledges the needs and requirements of landowners while enhancing ecosystem integrity and improving ecosystem services.
- Improve or sustain the greenhouse gas emissions profile of the landscape, including through improved soil carbon and standing biomass.
- Improve or sustain species richness and biodiversity, with sensitivity to key native species in need of particular habitat.

- Encourage preservation and where possible reintroduction of native plant species important for landscape health.
- Enhance or sustain pollinator foraging resources and habitat.
- Improve or sustain water quality and availability of water.
- Enhance or sustain soil health through greater land cover and organic carbon and reduced erosion.
- Preserve delicate or protected land, such as riparian waterways and surrounding habitat; slopes; and areas protected for particular plant or wildlife species.
- Reduce the risk for harmful, uncontrolled fire.
- Preserve any biomass that the landowner indicates should not be removed or that is important for overall landscape health.
- Do not exacerbate the spread of any diseases or negative impacts on the ecosystem (e.g., Oak Wilt).
- Facilitate best practice land management with landowners after initial treatment that can help achieve the principles above.

For more information on **The Earth Partners** and to find out ways to partner with us as a landowner, energy provider, technology developer, or other stakeholder, contact **Chas Taylor** (chas.taylor@teplp.com) or **Emily McGlynn** (emily.mcglynn@teplp.com) or visit us at www.theearthpartners.com.