

# REFUELING REUSE ECOLOGICAL REVITALIZATION OF ABANDONED GAS STATIONS



Abandoned Gas Stations are a common type of [brownfield](#)<sup>1</sup>. If you have one in your community, use this checklist to bring more life to the environment through ecological revitalization.



## WHY FOCUS ON ABANDONED GAS STATIONS?

There are **450,000**  
U.S. Brownfield sites  
and approximately **50%**  
have leaking underground  
storage tanks (USTs) at old  
gas stations.

Many abandoned gas stations are  
**under 3 acres**  
in ideal locations for reuse as parks,  
gardens, greenspaces, recreation,  
residences, or commercial spaces.

Community health and the  
environment can benefit when  
petroleum contaminants at the  
site, in the building, in  
groundwater, and soils are  
addressed, and exposures  
prevented.

# HOW CAN YOUR ABANDONED GAS STATION REUSE IMPROVE THE ENVIRONMENT?

Review the below checklist points to determine their applications within your site context.

## SOIL HEALTH & REMEDIATION

- **What can help speed up the natural break down of petroleum?**
- Soil amendments, as organic materials, can improve soils, reduce compaction and help reduce the spread of petroleum contaminants. Add native plants to create habitat and biodiversity.
- A healthy soil structure and soil amendments can balance pH, improve water holding capacity and drainage, filter contaminants and cycle nutrients which promote plant growth and biological diversity. Learn more about [soil properties](#)<sup>2</sup>, [phytotechnologies](#)<sup>3</sup>, and [Bioremediation](#)<sup>4</sup>.

## GREEN INFRASTRUCTURE AND STORMWATER

- **How can expanding green space and unpaved areas near a site bring benefits?**
- Adding and extending green areas with rain gardens, bioswales, green roofs and permeable pavements aid stormwater management and provide other [health benefits](#)<sup>5</sup> to the community.
- Green design may also reduce construction costs and the need for salt in the winter. Read more on [green infrastructure](#)<sup>6</sup>.

## ECOSYSTEM BENEFITS

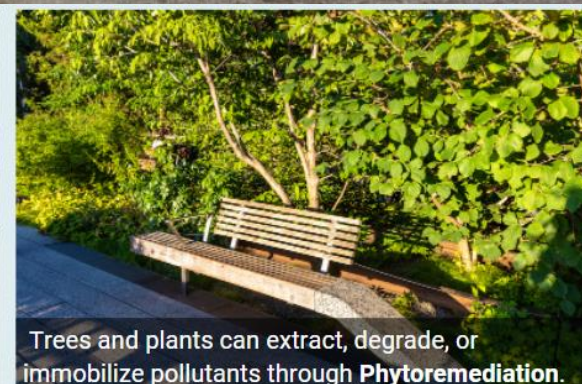
- **What natural features provide benefits and strengthen ecosystems?**
- Planting trees, shrubs, grasses or flowers can reduce air pollution, assist temperature regulation, buffer noise and provide habitat for pollinators, birds, and wildlife. Read more on [ecosystem benefits e](#)<sup>7</sup>.

## ACCESSING GREENER REUSE

- **How do residents, workers or visitors access and enjoy natural features of the intended reuse?**
- Natural features can beautify and have environmental function that increase property values. Consider how greenery can add commercial value and complement solar panels, battery storage, EV charging and other forward-looking reuses.



**Bioremediation** enhances natural biological processes that degrade contaminants in soil and groundwater.



Trees and plants can extract, degrade, or immobilize pollutants through **Phytoremediation**.



# ABANDONED GAS STATION REVITALIZATION EXAMPLES

Successful reuse is not one size fits all. Contact your local, state, and tribal brownfields program for their help.



**Big Daddy's Garden**  
Emeryville, California

Big Daddy's Complete Rejuvenating Community Garden is named for the owner of the gas station and autoshop that was once at this site.

- Neighborhood residents led the creation of the garden space.
- Volunteer work and a combination of city and local donor funding fueled the construction.
- Bringing in raised garden beds and clean soil is safe practice to ensure residual petroleum contaminants are not taken up into the garden products. Read more on what you should [Know Before You Grow](#)<sup>8</sup>.



**SeSequential Biofuels**  
Eugene, Oregon

[SeSequential](#)<sup>9</sup> is a biofuels station and retail store restored with green infrastructure in a gas station brownfield redevelopment.

- Stormwater is filtered by the station's vegetated roof, roadside rain gardens, and a retention pond.
- Passive solar heat and lighting reduce energy needs of the site.
- Local pollution from fuel is reduced by offering bioethanol and biodiesel produced from used cooking oil and agricultural and industrial waste instead of volatile oil compounds.
- Photo source: [GreenRoofs.com Featured Project](#)<sup>10</sup>



**Brandywine Village Green**  
Wilmington, Delaware

The city of Wilmington in coordination with the Greater Brandywine Village Revitalization Group revitalized an abandoned gas station site into a park and parking lot with green infrastructure features to fit the immediate needs of the community.

- Permeable pavement enables stormwater to collect in piping under the parking lot, where it then flows to a bioswale - a depression in the surface used to collect stormwater.
- Contaminants in runoff are absorbed by sand and peat moss below the parking lot and bioswale.
- Photo source: [Region 3 Paving its Brownfields " Green " 11](#)



**RS Automotive**  
Tacoma, Maryland

RS Automotive is an electric vehicle (EV) charging station opened in 2019 after the owner closed the previous autoshop and gas station.

- Underground storage tanks were removed with plans to keep the autoshop open.
- City and state grant funds revitalized the shop into an EV charging station.
- Patrons visit nearby businesses while their car charges for 15-30 minutes.
- Photo source: [Mhari Shaw/NPR](#)<sup>12</sup>

# WHY TRANSFORM ABANDONED GAS STATIONS INTO ENVIRONMENTAL COMMUNITY ASSETS?

Determine with community members what benefits they want to see in the site reuse.



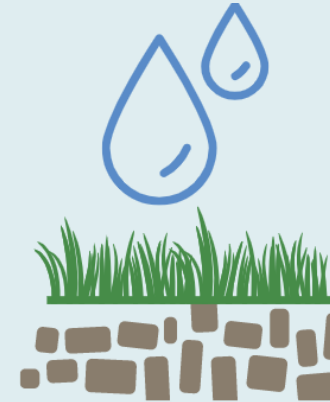
## Meeting Community Need

- Many under-resourced and poor communities do not have access to green spaces. Transforming abandoned gas stations into green spaces on main streets and commercial areas has environmental [possibilities nationwide<sup>16</sup>](#).
- The benefits associated with remediating and revitalizing a single abandoned gas station site can be impactful for a single community. At a [national scale<sup>17</sup>](#), adding benefits from the thousands of sites across the US may lead to significant benefits over time ([EPA 2014<sup>18</sup>](#)).
- The following sections contain a few reasons to introduce environmental assets to a community in place of an abandoned gas station.



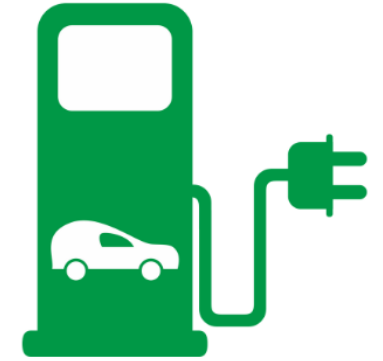
## Trees and Greenery

- Planting a greater diversity of tree species facilitates significant recreational and aesthetic value found in a [2019 analysis<sup>19</sup>](#).
- The estimated beneficial effects of trees on greenery include 17.4 million tons of air pollution removed and \$7 billion value in human health savings in the Conterminous U.S. according to a [2014 study<sup>20</sup>](#).
- In addition to reducing pollution and providing greenspace, trees also lower energy bills and energy demand by providing shade and cooling the air through [evapotranspiration<sup>21</sup>](#).



## Green Infrastructure

- Redevelopment of metro area brownfield sites reduces impervious surfaces, a type of green design for stormwater management, by 73-80% compared to business as usual development ([EPA 2020<sup>22</sup>](#)).
- Green infrastructure can bolster the capacity to manage stormwater. It costs less than conventional gray infrastructure and reduces municipal water usage and cooling costs.
- Reducing stormwater-related impacts also reduces a person's exposure to water pollution and flooding-related health hazards and their associated [health outcomes<sup>23</sup>](#), such as waterborne illnesses.



## EV Charging

- Create an EV charging station to meet growing charging needs and reduce vehicle emissions. Decreasing greenhouse gas emissions also reduces air pollution, dependence on fossil fuels and helps meet climate goals.
- Assess the market potential of an EV charging station in your community, as demonstrated in [Alameda County, California<sup>24</sup>](#).
- The property cleanup costs can also be less expensive when repurposing the site as an alternative fueling station compared to other redevelopment options.
- Read more on how to convert your abandoned gas station site into an [EV charging station<sup>25</sup>](#).

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