



## Alternative Uses of the Right-of-Way

### ROW Policy and Regulations

Applicable legislation, policy, regulations, and guidance for ROW projects:

- [23 CFR Part 645.111 Utilities](#)
- [23 CFR Part 710 Right-of-Way and Real Estate](#)
- [Memo: State DOTs Leveraging Alternative Uses of the Highway Right-of-Way Guidance](#), April 27, 2021

This issue of *Successes in Stewardship* highlights the work that the Federal Highway Administration (FHWA) and State departments of transportation (State DOTs) are doing to promote additional practical and beneficial uses of highway right-of-way (ROW). Highway ROW is defined as publicly owned real property that was acquired for highway purposes. “Alternative uses of the ROW” projects are efforts or activities that utilize ROW adjacent to transportation facilities for a non-highway purpose.

The FHWA [memo](#), *State DOTs Leveraging Alternative Uses of the Highway ROW Guidance*, released in April 2021 discusses ways in which State DOTs can leverage highway ROW to address pressing

public needs related to climate change, equitable communications access, and energy reliability. A large range of projects may be deployed within the ROW, including solar arrays, electric vehicle (EV) charging stations, broadband installation, pollinator gardens, and use of native plantings to improve stormwater management systems.

Alternative uses of the ROW, depending on the type and design, can support the reduction or elimination of maintenance costs, generate revenue through public-private partnerships, increase native species habitat, improve or diversify a State’s renewable energy portfolio, or add aesthetic beauty to the location. Alternative uses of the highway ROW allow State DOTs to maximize the value and productivity of their existing assets. The FHWA [memo](#) uses two categories to classify alternative uses of the ROW projects, (1) Clean Energy and Connectivity (CEC) and (2) biological sequestration projects.

CEC projects include renewable energy, broadband, alternative fueling, and electrical transmission and distribution in the ROW of a Federal-aid highway. Depending on existing State laws and regulations governing highway ROW management, State DOT’s have two methods to pursue CEC projects. The first option is for CEC projects to be considered as a utility under [23 CFR Part 645](#). The Federal definition of a utility facility ([23 CFR 645.207](#)) is broad and can cover the multiple ways State DOTs may define a utility. As stated in [23 CFR 645.209\(m\)](#), “in determining whether a proposed installation is a utility or not, the most important consideration is how the State views it under its own State laws and/or regulations.” For States to utilize this option, the corresponding State DOT should have a Utility Accommodation Policy (UAP) with specific language accommodating CEC projects within the ROW. Note that State DOTs should submit a UAP in accordance with [23 CFR 645.211](#) and [645.215](#), and it should include the procedures, criteria, and standards to evaluate and approve applications for utility facilities within the highway ROW. FHWA will provide programmatic approval of the UAP, meaning that individual CEC projects across the State do not need to be reviewed and approved by FHWA as long as they are included in the FHWA-approved UAP.

Without a specific mention of CEC in their UAP, State DOTs may still permit CEC projects within the ROW if they use FHWA’s definition of a utility, or the State law allows for renewable energy generation or broadband to be considered as a utility facility. The permit for the facility must address the terms and conditions, roles and responsibilities of the parties, and the rights and interests being permitted. Under [23 USC 111](#), the section of Federal law on agreements relating to use of

and access to Interstate System ROWs, State DOTs are prohibited from utilizing ROW along the Federal-aid Interstate System to construct or provide access to automotive service stations or other commercial establishments that serve motor vehicle users. However, utility CEC projects in the Federal-aid Interstate and non-Interstate ROW are not considered a prohibited commercial activity unless they are also acting as an automotive service station or other commercial establishments. Simply put, a utility use such as a solar array or a free EV charging station is allowed within the Federal-aid Interstate or non-Interstate ROW. Note that toll turnpikes (highways constructed and maintained by non-Federal-aid funds) are different—they do allow automotive service stations and commercial facilities at service areas with their ROW.

If a State DOT's CEC project cannot meet the requirements of a utility under State law and/or regulations, another option is to seek FHWA approval of the facility as an alternative use of the ROW under [23 CFR 1.23](#) and [23 CFR 710](#). As discussed in the previously referenced [memo](#), FHWA may approve a CEC project as an alternative use of the ROW if the project is determined to be in the public interest and will not impair the highway or interfere with the free and safe flow of traffic ([23 CFR 1.23](#)). CEC projects can be considered as alternative uses of the ROW if they comply with Federal real property management regulations ([23 CFR 710](#)). In further support of CEC projects, the [memo](#) also clarifies that CEC projects within the ROW under this use may be eligible for an exception to the fair market value requirements for the lease or disposal of real property based on social, environmental, and economic purposes ([23 USC 156\(b\)](#) and [23 CFR 710.403\(e\)](#)). This should benefit applicants hoping to establish CEC projects at a low cost.

Aside from CEC projects, the other category of alternative uses of ROW projects is biological carbon sequestration practices. Depending on the location and space, a highway ROW could be enhanced by incorporating alternative vegetation management practices and native plant species and their habitat. These projects have the potential to provide environmental benefits such as sequestering atmospheric carbon, reducing erosion from stormwater runoff, reducing peak flow and runoff velocity, enhancing stormwater infiltration, and developing new or enhancing existing habitats for native pollinators. Vegetation management additionally helps with stream bank stabilization, wetland mitigation, water quality improvement, air pollution mitigation, noise abatement, and wildlife habitat. Besides the environmental and climate resilience benefits, biological carbon sequestration projects can also create aesthetically pleasing ROW with the use of wildflower plantings and landscaping.

The two projects described below identify different ways alternative uses of the ROW can address climate change, resiliency, sustainability, and energy reliability to benefit the community.

## Project Highlight: GDOT's Wildflower Program

Georgia Department of Transportation's (GDOT's) [Wildflower Program](#) started in 1974 as a partnership between GDOT and the [Garden Club of Georgia, Inc.](#), the oldest garden club in the country. The program was motivated by improving the visual appeal of ROW and modeled after Texas DOT's Wildflower Program and found wide support across State leadership. To assist with funding and management of the program, the Roadside Enhancement and Beautification Fund (REBF) was established in 1998 through an amendment to the Georgia State constitution. The law also established the Roadside Enhancement and Beautification Council (REBC), a Governor-appointed advisory council made up of elected State officials and representatives from business and conservation groups responsible for overseeing the REBF.



Figure 1: Wildlife plantings along the GDOT ROW. Source: GDOT

The [REBC Grant Program](#) (previously known as the Gateway Grant Program) began in 2008 and provides funding opportunities for organizations, local governments, and State agencies to apply for grants (up to \$50,000) to enhance the landscape in the State ROW. To date, \$5,085,433 has been awarded to communities throughout Georgia through 167 projects. See Table 1 for a breakdown of the grant program phases to date. The REBC Grant Program is funded through contributory value fees, which are paid by outdoor advertising companies to GDOT for vegetation removal at outdoor advertising signs. The availability of grant funding varies year to year depending on permit fees collected. Applicants may only use funds on landscape plant material, sod, topsoil, mulch, and the labor costs associated with the installation of plantings. No local match is required for this program; however, applicants must commit to maintaining the project in the long term. Long-term maintenance activities are essential to the success of roadside plantings and, therefore, are an important component of the application process.

Table 1: GDOT Wildflower Grant Program Phases. Source: GDOT

Previous Phases	Year	Grants Awarded	Total Reinvested in Right of Way Vegetation the REBC Grants
Phase 1	2008	23	\$753,879
Phase 2	2009	38	\$1,350,984
Phase 3	2010	20	\$524,996
Phase 4	2014	43	\$1,250,179
Phase 5	2016	21	\$384,231
Phase 6	2020	22	\$821,164
<b>Total</b>			<b>\$5,085,433</b>

In addition to the REBC Grant Program, GDOT’s Landscape Division oversees the yearly plantings of summer annuals and fall native perennials through the REBF. The Wildflower Program [website](#) includes a comprehensive list of the types of native perennials, annuals, and daffodils that are planted along the ROW throughout the State.

Most of the current wildflower planting and maintenance work is contracted to third parties due to staffing constraints at GDOT. To date, GDOT’s Wildflower Program has planted over 6,400 acres of wildflowers and over 3 million daffodil bulbs across the State through the REBF. Through the wildflower plantings, GDOT is focusing on controlling invasive exotic species, specifically the Johnson grass which often outcompetes the native meadows and presents a roadway safety issue due to the height of the grass. REBF funds are generated through the sale of specialty auto tags (see Figure 2) and donations. The funds carry over year to year, meaning the scale of the program may change on an annual basis depending on funding availability, staffing capabilities, and program priorities.

In addition to providing aesthetic benefits, the Wildflower Program protects the local environment, improves vegetation management practices, creates habitats for pollinators, migratory birds, and butterflies, and furthers research in the areas of soil science, ecology, and resilient roadway designs.

To support resiliency of the roadway, drill seeding is used to see the wildflowers, which minimizes soil disturbance, prevents silt runoff during rain, and prevents invasive exotic weed seed from germinating. GDOT is also testing a production technique where native perennial seed is planted along with cosmos in July. The cosmos act as a cover crop for the native seedlings, providing them with shade and moisture. When they finish their bloom cycle in late fall, the cosmos are cut, and the native perennials bloom the next season. GDOT currently has seven one-acre sites across the State that were planted two seasons ago using this method and they have already seen success through cost savings and the blooming of biennials, such as lance-leaf coreopsis, the following season.



Figure 2: Wildlife Program automotive tags from GDOT’s website. Source: GDOT

Due to the scale of the program, maintenance of all the wildflower planting locations across the State can be a challenge; therefore, GDOT works with community partners to continually test new planting and maintenance methods to ensure the sustainability of the Program’s wildflower plantings within the ROW. Some of GDOT’s partnerships include:

- **The University of Georgia (UGA) College of Environment and Design and [The Ray C. Anderson Foundation](#):** GDOT partnered with UGA and the Ray C. Anderson Foundation on a research project to study alternative methods of weed suppression and control using native plants and grasses. Research is taking place on an Interstate 85 interchange in Troup County in west central Georgia. GDOT also worked with this group to test methods for stabilizing recently repaired slopes. The method is called *Terraseeding* (see Figure 3), which includes spraying a peanut hull compost on the slope simultaneously with the seed mixture. One part of the slope is stabilized with traditional jute mats with added biochar and humic acid, and the other part of the slope has a tackifier mixed in with the mulch and seed. GDOT will compare the results of each side of the slope. The part of the slope with the seed mixture should require only one mow a year as opposed to the typical four mows for traditional turfgrass, significantly reducing maintenance costs.
- **The Georgia Association of Conservation Districts (GACD):** GDOT and GACD collaborated in early 2022 to plant 15 one-acre pollinator habitats at select visitor information centers and rest areas across the State. Signage



is also being installed at these locations to educate visitors on the native plants and grasses and the importance of their ecosystems for pollinators.

- **Nationwide Candidate Conservation Agreement for Monarch Butterfly on Energy and Transportation Lands:** This effort is part of the Candidate Conservation Agreement with Assurances (CCAA) and Candidate Conservation Agreement (CCA) and is a voluntary nationwide initiative that includes over 30 entities from the energy and transportation sectors. The goal of the agreement is to provide a net conservation benefit to monarch butterflies and to address the potential effects of maintenance and modernization activities within energy and transportation sectors on Federal and non-Federal lands on the monarch butterfly and their populations.<sup>1</sup> Partners to the agreement commit to adopting conservation measures that are expected to sustain, enhance, and restore conditions favorable for monarch breeding and foraging. GDOT is participating in this nationwide initiative by setting aside acreage on the backslopes of roadways for mowing once a year.



GDOT plans to continue to grow their Wildflower Program by: Figure 3: GDOT conducting *Terraseeding* in the ROW. Source: GDOT

- Developing a partnership program with cities and towns across the State to install and maintain one-acre or larger wildflower habitats along the ROW. GDOT will work with communities to plant seeds throughout the spring, summer, and fall to ensure blooms throughout the year.
- Establishing an integrated geographic information system mapping database to identify all Wildflower Program planting locations across the State for information and maintenance purposes.
- Developing new and improving existing wildflower habitats by identifying areas where GDOT already has native wildflowers in the seedbank and altering maintenance methods to encourage these areas to flourish. Areas such as backslopes are good candidates for this approach as they can reduce mowing, provide wildflower meadows where the drill seeders cannot plant, and fit into GDOT's CCA.

## Project Highlight: MnDOT's Solar Program

Minnesota Department of Transportation's (MnDOT's) [Solar Program](#) began in 2010 when MnDOT partnered with Minnesota's Department of Natural Resources (DNR) to construct the visitor center in Grand Portage, MN. This project included a 7.4-kilowatt, 32-panel ground-mounted solar array by the visitor center parking lot. Since then, MnDOT has continued to incorporate solar energy into project development processes to reduce greenhouse gas emissions and long-term operational costs, meet energy needs, and improve agency resiliency. Projects that have incorporated solar energy development include the reconstruction of the Tettegouche Visitor Center in Silver Bay (2014, in partnership with DNR) and the development of the new MnDOT District 6 Headquarters building in Rochester (2016).

To meet emission reduction goals under Minnesota's [Next Generation Energy Act](#), State leadership has recently undertaken numerous renewable energy efforts, including establishing policies and leadership positions that support the State's transportation and climate goals. Recent efforts have included the following:

- In 2018, MnDOT established a chief sustainability officer and two sustainability coordinator positions in the Office of Sustainability.
- In 2019, MnDOT created an assistant commissioner role to lead a Sustainability and Public Health Division.
- In April of 2019, the Governor of Minnesota issued [Executive Order \(EO\) 19-27 titled "Directing State Government to Conserve Energy and Water, and Reduce Waste to Save Money."](#)
- In 2020, MnDOT convened a new Sustainable Transportation Advisory Council (STAC).

Leadership support at the State and local level has been key in furthering the success of MnDOT's renewable energy efforts, both in developing solar projects within the ROW and investing in renewable energy offsite. Solar energy costs

<sup>1</sup> [https://www.fws.gov/sites/default/files/documents/Final\\_CCAA\\_040720\\_Fully%20Executed.pdf](https://www.fws.gov/sites/default/files/documents/Final_CCAA_040720_Fully%20Executed.pdf)

have also been decreasing. Since 2010, commercial solar photovoltaic (PV) prices dropped 69 percent to \$1.72 per watt.<sup>2</sup> The growing solar market and competitive prices have helped MnDOT leverage solar for its cost-effectiveness and energy efficiency.

In recent years, MnDOT has been continuing to explore developing solar arrays within its ROW and through community solar garden subscriptions. Community solar gardens are centrally located solar PV systems that produce electricity for participating subscribers. Subscribers invest in renewable energy credits (RECs), which are issued when one megawatt-hour of electricity is generated and delivered to the electricity grid from a solar array. RECs are the tool used to substantiate renewable electricity use claims and make progress toward State renewable energy standards. Community solar gardens and RECs are a way for people to invest and benefit from solar energy without installing their own stand-alone project. Currently, MnDOT holds subscriptions to two community solar gardens on agency property and 14 community solar gardens offsite, as described in [FHWA's Public Roads Summer 2022 Edition](#).



Figure 4: A rooftop solar garden on the ABC Ramps Mobility Hub in downtown Minneapolis. Source: MnDOT

MnDOT has installed two solar projects within MnDOT's ROW through their Solar Program. One of the two ROW projects is the 1.4-megawatt solar garden on the rooftop of a downtown Minneapolis parking garage, known as the ABC Ramps Mobility Hub (see Figure 4). The 3,760 elevated solar panels provide weather coverage for parking spaces. MnDOT is a backup subscriber for 20 to 40 percent of the energy produced from the solar panels for 25 years since it was completed in 2019. The bill credits offset MnDOT Metro District electricity costs for lighting on Interstate 394 in Hennepin County.

The second solar installation within the MnDOT ROW includes the construction of a 1-megawatt community solar garden at a former gravel pit near the City of Afton, MN (see Figure 5). MnDOT subscribes to 40 percent of the total subscription for energy produced at the site and leases the remaining 60 percent. The bill credits from this community solar garden offset electricity costs for the MnDOT Metro District headquarters building in Roseville, MN. The project was completed in the fall of 2020. MnDOT is working with the same solar developer to create a second solar garden in the same location. The hope is that bill credits from that new garden will be assigned to MnDOT facilities in the Twin Cities area.



Figure 5: A 1-megawatt community solar garden in Afton, MN, formerly a gravel pit. Source: MnDOT

MnDOT's offsite solar subscriptions were set up in 2019 through two 25-year agreements with local community solar garden developers. The agreements allowed MnDOT to purchase 7.4 million kilowatt-hours annually from 14 different gardens across the State. These 14 subscriptions support agency operations in 18 counties, equivalent to approximately 24 percent of MnDOT's total annual electricity use.

MnDOT uses a variety of metrics to track the success of their solar program. The agency evaluated the percentage of their energy use that is met through their own solar projects or through community solar garden subscription agreements. In 2021, 15 percent of MnDOT's energy needs for agency facilities were covered through MnDOT's onsite solar energy and community solar garden subscriptions. MnDOT's target is to meet 25 percent of the agency's energy needs through renewable energy use or subscriptions.

<sup>2</sup> <https://www.dot.state.mn.us/sustainability/solar.html>

With a decade of experience in developing solar projects, MnDOT has learned numerous lessons on the challenges and best practices of implementing solar at the agency. Some of those lessons are addressed in [MnDOT's Solar Project Guiding Principles](#), which were identified to promote consistency in the agency's vision and mission for its Solar Program. A summary of MnDOT's guiding principles is shown in the righthand box. Other lessons learned include:

- Select solar garden sites that can accommodate native plants and pollinator habitats, when possible, to maximize the use of ROW. Collaborate early and often with DNR, especially if native plantings are involved in the project.
- Strategically select ROW locations with high solar potential. The locations should not interfere with future transportation needs.
- Include legal teams in early conversations about solar contracts and negotiations with solar developers. These processes can take years, so getting the legal staff involved early and often can help build up expertise, set expectations, and streamline the process.
- Educate vendors early on about State requirements so adjustments can be made to their processes to account for those requirements.
- Provide solar-specific training to procurement staff since the contracting process for solar projects is different than the typical process. Opportunities should be provided for solar vendors to talk directly with procurement staff.

**MnDOT Solar Project Guiding Principles**

- Solar projects should generally be cost-neutral or save money for the agency.
- MnDOT may pursue solar projects with higher costs if the project supports the agency's vision.
- Solar projects should support agency goals around equity and diversity in contracting.
- RECs should be utilized to help MnDOT meet agency sustainability goals for renewable energy and to reduce carbon pollution.
- Solar projects should offset as much annual average energy load as possible, while minimizing excess energy returned to the grid.
- All new building projects and roof upgrades should evaluate the potential to install cost effective solar panels.
- When MnDOT receives unsolicited solar proposals in MnDOT ROW, staff may gather additional information to explore new ideas.

MnDOT plans to continue to develop their solar program, especially within their ROW. Some of their plans include:

- Continuing to evaluate opportunities on a site-by-site basis.
- Exploring partnerships with Tribes through virtual power purchase agreements or other means to support renewable energy generation across the State and ensure that the benefits of renewable energy are shared between the Tribe and MnDOT.

## For More Information

To learn more about renewable energy in the ROW, see the following resources:

- Quick Guide: [FHWA Requirements for Renewable Energy Projects in Highway Right-of-Way \(ROW\)](#)
- Memo: [Designation of Alternative Fuel Corridors \(2022/Round 6\)](#)
- Fiscal Year [2022/2023 EV Infrastructure Deployment Plans](#)
- [FHWA Public Roads: Renewable Roadsides](#)

To learn more about vegetation management practices within the ROW, see the following resources:

- FHWA resource for [managing pollinator-friendly roadside vegetation](#)
- FHWA Environmental Review Toolkit: [Roadside Use of Native Plants](#)
- FHWA Environmental Review Toolkit: [Ecosystems and Vegetation Management](#)
- FHWA [Pollinators and Roadsides: Best Management Practices for Managers and Decision Makers](#)

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