

LUC Drawdown

As a university, Loyola is aggressive in advancing its sustainability efforts as a manifestation of its commitment to social justice. The most pressing social and environmental issue we face is that of climate change. For a full summary of Loyola's efforts to address climate change, visit [LUC.edu/SustainLoyola](https://luc.edu/SustainLoyola).

A useful framework in considering what actions are required to mitigate and adapt to climate change is [Project Drawdown](#), a science-based effort to quantify available solutions and rank these by scale and impact. Loyola is supporting the work of Project Drawdown, the City of Chicago, and the Illinois Green Alliance and has categorized its climate actions using the Drawdown framework. This site provides a high-level overview, examples, and links to more information across the curriculum, campus, and community work of Loyola.

For more information, visit any of the links or contact the Office of Sustainability to learn more.

Project Drawdown is organized by Sector and Rank (considering scale of impact). For its organization, Loyola has utilized the Sectors listed below to share its work towards carbon drawdown. Not every solution provided in Project Drawdown is being utilized by Loyola. Many of these are not regionally appropriate or feasible for Loyola at this time. For a full list of all 80 solutions, visit [Project Drawdown](#).

Buildings and Cities

Building Automation – Loyola utilizes building automation across all of our high-performing buildings including aggressive temperature set-points, seasonal pre-heating/cooling, and passive ventilation approaches to reduce energy consumption.

Green Roofs – Loyola has more green roofs than any university in the Midwest and this includes a mix of intensive and extensive soils with associated environmental benefits for stormwater, urban heat island, biodiversity and insulating properties. A unique installation is the use of plants atop the Alfie Athletic Center to show Loyola's mascot, Lu the Wolf, from the air (Google it!).

Heat Pumps – Loyola uses water to water, water to air and air to water heat pumps for some new construction including the two large geothermal installations. Heat pumps and variable refrigerant flow systems allow Loyola to reduce reliance on methane heating systems.

Insulation – Deep energy efficiency retrofits have taken place on many existing buildings including the oldest on campus, Dumbach and Cudahy Science. While usually added from within the envelope, an external façade including insulation was added to the south side of Ignatius House, the main Jesuit residence on Lake Shore Campus.

LED Lighting (Commercial) – Loyola has systematically retrofitted all available lighting to LEDs with advanced controls.

Net Zero Buildings – Loyola is developing its building and energy decarbonization strategy (2022).

Retrofitting – Using the 2016 and 2022 Energy Master Plans, Loyola continues to retrofit existing buildings and systems. One of these projects led to the closure of the LSC Steam Plant for a high efficiency hot water system and chiller plant maximization.

Smart Glass – Loyola recently installed its first application of smart-glass on the Flex Lab building utilized by the Engineering Department.

Smart Thermostats – Across the many campuses, smart thermostats are utilized to feed information back to Loyola’s building automation system. This information can be utilized by the university to optimize building controls or, in some special locations, by the occupant directly.

Solar Hot Water – See information under the Energy Sector

Not appropriate at the time: LED lighting (household)

Cities:

Bike Infrastructure – Loyola is well supported by bike infrastructure at all three main campuses. Student-run bike shop, ChainLinks, provides onsite repairs and rentals, and Chicago’s bikeshare program Divvy can be used with student and employee discounted fares.

District Heating – Loyola transitioned from a central steam plant between 2012 and 2017 to high-efficiency hot water heating.

Landfill Methane – Loyola’s waste hauler utilizes a landfill with methane capture and energy production.

Walkable Cities – Loyola is well supported by pedestrian infrastructure and public transit.

Not appropriate at the time: Water Distribution

Energy –

Electricity Generation Solutions:

Geothermal – Loyola has explored alternatives to facility heating and cooling in all major capital projects. Two geothermal projects using water to water heat pumps have been installed. The largest geothermal system in Chicago can be found under the [Institute of Environmental Sustainability](#), a 217,000 sf mixed-use facility. Additionally a geothermal system was installed at the Retreat and Ecology Campus in 2015/16. These systems provide 15-20 year return on investment while facilitating the transition of fuels-dependency. By transitioning to an electric-dominant load, it becomes easier to move to renewables only.

Methane Digesters (Large) – Loyola feeds all waste-water from the three main campuses to the [Metropolitan Water Reclamation District’s](#) treatment system. The District utilizes industry scale digesters to generate methane and a composted soil nutrient (Biosolids). Classes at Loyola have researched campus-size digesters but this was deemed to be not feasible at this time.

Micro Wind – Based on the shores of Lake Michigan, the Lake Shore Campus of Loyola certainly has a windy exposure, especially during winter months. A research group consisting of Physics and IES students, partnering with Elara Engineering and Loyola Facilities, has been collecting wind data

continuously for three years atop Santa Clara Hall. The project, funded by The Green Initiative Fund, Loyola's student sustainability fund, provided a baseline of data to be considered should a small turbine be proposed in the future.

Rooftop Solar – With the ground-breaking Illinois energy bill of 2016 (Future Energy Jobs Act), subsequent Climate and Equitable Jobs Act (CEJA in 2019), and rapidly dropping equipment prices, solar is an exploding area of development and cost-savings in electricity generation. A group of students proposed GoSolar, a project to install rooftop solar on the largest roofs at Loyola in 2016. This project was supported by Loyola's Sustainability Committee and President Rooney. A Request for Proposals was released in 2017 and a developer was identified. Although this project was deemed not appropriate at the time, Loyola is still considering onsite solar as projects deem appropriate.

Solar Farms – Understanding that Loyola may have limited rooftop and ground space to install solar electric, the university is exploring its opportunities to invest into a solar farm that can provide the same benefits as "on-site" solar. These include on-site solutions at the Retreat and Ecology Campus and off-site solutions through a Power Purchase Agreement or similar arrangement.

Solar Water – A 2014 feasibility study funded by The Green Initiative Fund considered the potential to generate heated water from the sun for Loyola residence halls on the Lake Shore Campus. These findings were shared with Loyola Facilities and are being considered for retrofits and future residence hall installations

Wind Turbines (Onshore) – Similar to the solar farm strategy, Loyola will only generate a small portion of its energy on-campus. In considering an off-site partnership to purchase clean energy from a wind farm, Loyola is considering the costs (currently the cheapest electricity to install) as well as the environmental benefits.

Not appropriate at the time: Concentrated Solar, In-Stream Hydro, Methane Digester (Small), Solar Farms, Wave and Tidal, Wind Turbines (Offshore).

Transitional Technologies:

Biomass – Researchers at Loyola's Institute of Environmental Sustainability are working with land managers and restoration ecologists to understand the benefits of using invasive species for biomass.

Nuclear – Loyola's main campuses are located in Illinois, a state which primarily generates its electricity from nuclear power. While only a portion of the fuel-mix for our PJM grid electricity, this power source is a carbon-free, base-load, source, however, it is aging and has legacy costs that are passed on to the consumer, as well as long-term concerns about waste storage.

Waste-to-energy – All of Loyola's landfill waste is conveyed to a landfill that, when capped and closed, will generate energy through a methane-recapture system.

Not appropriate at the time: Cogeneration

Enabling Technologies:

Energy Storage (Distributed) – Similar to solar power, this is an exciting time for energy storage. Loyola is currently considering distributed storage solutions to provide relief during peak demand times or for revenue generation on the markets supporting grid flexibility.

Grid Flexibility – As a very large electricity consumer, Loyola has a role to play in making the grid more resilient and responsive, while providing power to our campus community. This can take place during emergencies such as extreme weather events or during peak demand times, such as a hot summer afternoon. Loyola participate in a Demand Response program to curtail its electricity use during peak events providing a financial return to the institution and is exploring renewables and energy storage as additional strategies towards resilience and reliability.

Not appropriate at the time: Energy Storage (Utilities), Microgrids

Food

Supply-Side Solutions:

Biochar – Loyola researchers are studying biochar ([LINK](#)) to create soil structure and function in impacted lands. This can be used for natural area restoration or agricultural purposes bringing lands impacted by human activities back into economic and ecological productivity.

Conservation Agriculture – Surrounded by some of the most productive agricultural land available, Midwest farmers are working to reduce their impacts. Erosion, nutrient pollution, and biodiversity loss are just a part of our agricultural history. One of the faculty working on these topics is [here](#).

Farmland Restoration – As we identify the need to set aside more land for biodiversity and the systems that we rely on for clean air and water, we can un-do a portion of our agricultural development by restoring ecological function including water retention and cleansing, carbon sequestration, and habitat. Faculty in multiple departments are working on understanding the drivers to land use and development towards keeping more land in production while conserving resources.

Nutrient Management – An unfortunate impact of the agricultural legacy is inefficient use of nutrients leading to pollution and aquatic “dead-zones”. Loyola faculty have been partnering with land managers and farmers to understand nutrient use and strategies that might reduce nutrient pollution.

Not appropriate at the time: Farmland Irrigation, Improved Rice Cultivation, Managed Grazing, Multistrata Agroforestry, Regenerative Agriculture, Silvopasture, System of Rice Intensification, Tree Intercropping, Tropical Stable Trees

Demand-Side Solutions:

Composting – In 2012, Loyola introduced “back-of-the-house” organics collection in the first dining hall. Since then, composting has been increased to most dining halls. It is offered at Engrained Café, large public events through ‘Zero-Waste Events’, and the students and employees of Loyola can participate through the ‘Compost Bucket’ program. Learn more at LUC.edu/compost.

Plant-rich Diet – In choosing what we put on our plate, we choose our impacts on the planet. [Loyola Dining](#) provides plant-based options at all dining halls, cafes and catering.

Reduced Food Waste – Starting in 2008, Loyola Dining began implementing the ‘LeanPath’ initiative to track and reduce food waste at all steps. Actions implemented as a part of this initiative include reducing portion sizes, removing trays from dining halls, reducing plate sizes, and a detailed tracking system to identify where waste takes place and plan accordingly for future menus. To date, this has reduced food waste by 30%.

Not appropriate at the time: Clean Cookstoves

Land Use

Ecosystem protection solutions:

Coastal Wetlands – Loyola sits alongside Lake Michigan and has a history of protecting and preserving this important resource. Many faculty research aquatic ecosystems and advance our understanding of these complex systems.

Forest Protection – Loyola’s Retreat and Ecology Campus includes Oak / Hickory woodland and is restoring this land through the removal of invasive species and prescribed fire.

Indigenous People’s Land Management – Loyola recognized its role in the colonization and subjugation of indigenous communities in 2021 with the Land Acknowledgement Statement. It continues to reconcile this history and prioritize the engagement with past and current native peoples.

Ecosystem Restoration Solutions:

Temperate Forests – Loyola’s Retreat and Ecology Campus includes Oak / Hickory woodland and is restoring this land through the removal of invasive species and prescribed fire.

Not appropriate at the time: Afforestation, Peatlands, Bamboo, and Perennial Biomass

Transport –

Airplanes – Loyola’s business travel and study abroad programs rely on air travel and recognize the harm caused by this activity. In the near-term, Loyola allows the purchasing of offsets to carbon reducing projects and in the long-term is considering options to reduce and mitigate these harms.

Bike Infrastructure – See actions under Buildings and Cities sector

Cars/Electric Vehicles – Loyola has transitioned a number of its own fleet to electric vehicles and continues to look for options going forward. Loyola provides public charging stations at the Lake Shore Campus and is planning for additional charging and user arrangements going forward.

Mass Transit – Loyola is well served by public transit on all three main campuses. Pre-tax transit benefits provide cost savings for employees and students must purchase a U-Pass for transit access as part of their activities fee.

Telepresence – Loyola supports remote work and study options through the Information Technology Services Department.

Walkable Cities – See actions under Buildings and Cities sector

Not appropriate at the time: Ride-sharing, Electric Bikes, High-Speed Rail, Ships, and Trucks.

Materials –

Industrial Recycling – Loyola has large-scale recycling at all campuses.

Recycled Paper – Loyola has our office supply vendor provide recycled content paper as the default option.

Refrigerant Management – Loyola works proactively to address refrigerant management and leaks.

Water Saving (Home) – 60% of Loyola’s water use is in the residence halls, although these only make up 40% of the gross square footage. Loyola’s Facilities and Sustainability Offices work to address water use and leaks aggressively to protect nearby Lake Michigan.

Composting - See actions under Food sector

Landfill Methane - See actions under Buildings and Cities sector

Plant-rich Diet - See actions under Food sector

Reduced Food Waste - See actions under Food sector

Waste-to-Energy - See actions under Energy sector

Not appropriate at the time: Household Recycling, Alternative Cement, Bioplastic,

Women and Girls -

Educating Girls – As an institution of higher education, Loyola is committed to equitable access. The Gannon Center and degrees in gender studies and child rights address these issues thorough the curriculum.

Not appropriate at the time: Family Planning, Women Smallholders