



The North DuSable Lake Shore Drive (NDLSD) Phase I Study is currently evaluating the five remaining NDLSD Build Alternatives (“Level 3 Screening”). As part of this evaluation, nearly 30 different criteria are being considered, including Performance, Social, Economic and Environmental factors. The project team has separated the criteria into two categories: 1) distinguishing criteria that contain results that vary amongst alternatives, and 2) non-distinguishing criteria that contain results that are the same or similar amongst alternatives. This Study Spotlight addresses Climate Change, a non-distinguishing Level 3 Screening criterion. For additional details regarding the overall Phase I Study, please visit the project website at [northdusablelakeshoredrive.org](http://northdusablelakeshoredrive.org).

## CLIMATE CHANGE ASSESSMENT

The NDLSD Climate Change assessment draws upon Federal, State and Local requirements, with the foundation being the National Environmental Policy Act (NEPA) that requires an analysis of environmental effects as part of the decision-making process. Stakeholder feedback has also been important, with the Climate Change criterion being discussed at [Task Force Meeting #12](#) (Spring 2021) as well as the [Small Group Task Force Workshop Meetings](#) (Summer 2022). Stakeholders generally agreed with the evaluation criteria presented, while also commenting further on the Vehicle Miles of Travel (VMT) criterion. Specifically, stakeholders expressed support for alternatives that could reduce VMT, and opposition to alternatives that could increase VMT. The following summarizes the Climate Change Assessment, which has been developed through the lens of the NDLSD transportation project.

### How would the NDLSD Alternatives affect Climate Change?

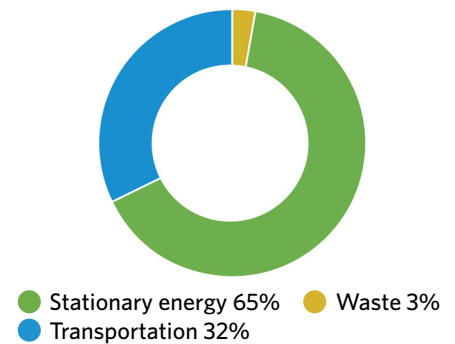
As summarized in the table below, all NDLSD Build Alternatives have positive effects with respect to transit performance, non-motorized travel, and green space, and conform to federal air quality requirements. For Vehicle Miles of Travel and Greenhouse Gas emissions, there were no distinguishing differences between the Build Alternatives. The evaluation results for VMT and GHG emissions are discussed in more detail on the following page.

Potential Project Effect	Comparison to 2050 No Action Alternative
Transit Performance	All Alternatives improve transit mobility and reliability, while also increasing transit mode share.
Non-Motorized Travel	All Alternatives improve accommodations for people who bike or walk, including travel to and from the Lakefront, and travel along the Lakefront.
Air Quality	All Alternatives meet regional air quality standards.
Green Space and Trees	All Alternatives provide a net increase in green space, and all impacted trees will be replaced at a minimum 1:1 basis.
Vehicle Miles of Travel (VMT)	No distinguishing differences between the No Action and the Build Alternatives (less than 1%).
Greenhouse Gas (GHG) Emissions	No distinguishing differences between the Build Alternatives (< 1%).

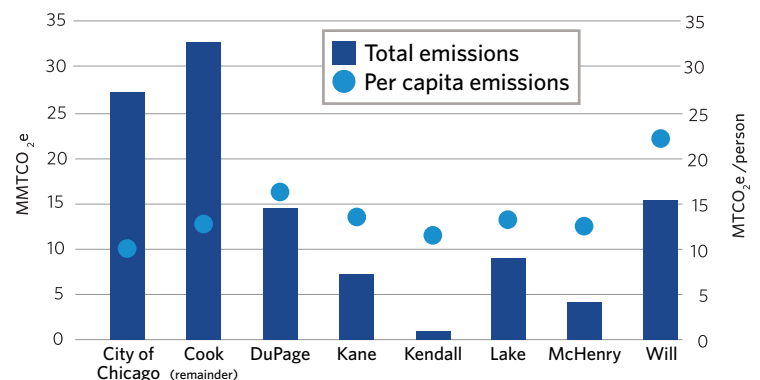
### Greenhouse Gas Emissions (Local and Regional Context)

Greenhouse Gas Emissions (GHG) consist of four different gases, with Carbon Dioxide being the largest component. According to CMAP’s latest GHG inventory, the predominant source of GHG emissions in our region is stationary energy consumption, with transportation being second.

#### 2019 regional emissions by sector



#### 2019 emissions by county: total and per capita



Source: CMAP’s Regional Greenhouse Gas Emissions Inventory (2019)

## Vehicle Miles of Travel (VMT)

Each of the Build Alternatives prioritize transit while reducing general purpose lane capacity (12% to 25% reduction, depending on the Alternative) and are not intended to encourage increased VMT. This was confirmed by the modeling results, which showed insignificant differences in VMT between the No Action Alternative and Build Alternatives (less than 1% difference). In addition, the modeling has shown that restricting auto capacity would not cause a substantive mode shift from autos to transit, which could reduce VMT. This finding is consistent with existing conditions in the study area including robust transit service, a high transit mode share, and dispersed origins and destinations for auto trips using Outer Drive that cannot be effectively served by express bus transit routes using Outer Drive. From an overall system perspective, the Build Alternatives involve relatively minor changes to a small portion (7 miles) of a much larger roadway network (1,570 miles), and as such, would not be expected to cause substantive changes in VMT, either positive or negative.

## Greenhouse Gases (GHG)

The USEPA's air quality model ("MOVES") was used to compare existing, year 2050 No Action and 2050 Build scenarios. The most notable analysis result was related to the change from existing to 2050 No Action conditions, which show a 30% reduction in GHG emissions. This result is driven by EPA's assumption that stricter fuel economy standards will be in place by the year 2050. The differences among the Build Alternatives were non-distinguishing (less than 1% difference). As noted above, the Build Alternatives involve relatively minor changes from an overall network perspective, and as such, would not be expected to cause substantive effects, either positive or negative, relative to No Action. It also is important to note that widespread conversion to Electric Vehicles (EV), is not assumed in the model. As such, the estimated GHG emissions for the NDLSA Alternatives can be considered conservative.



### Climate Action Plans

Climate Action Plans affecting the Study Area were developed at the Federal, State, Regional, and Local levels. Within Illinois, core strategies include increasing transit and non-motorized travel, decreasing VMT, decarbonizing transportation, and incorporating resilience, all in an equitable manner. The NDLSA Build Alternatives are consistent with these plans in that transit is prioritized, non-motorized travel is improved, vehicular capacity is reduced, and resilience measures are included. With respect to VMT, the NDLSA Build Alternatives include minor changes to a large transportation network, and as such, would not be expected to result in major changes overall travel behavior.

## How would Climate Change affect the remaining NDLSA Alternatives and Climate Resilience?

The NDLSA Corridor already experiences effects of Climate Change, most notably with waves overtopping the Outer Drive during major storm events. This issue, as well as other potential climate effects including climate resilience measures, have been considered and are summarized in the table below.

Potential Climate Effect	Climate Resilience Measure (Common to all Alternatives)
Increased shoreline erosion	Shoreline Protection measures will be implemented to strengthen the existing shoreline, contain flooding, and convey floodwater back to the Lake.
Wave overtopping, Outer Drive closures, and fluctuating lake levels	The proposed design is based on the most severe storm on record, coincidental with a 200-year high lake water level. This design will reduce the frequency of Outer Drive closures.
Increased maintenance - Lakefront Trail damage	In the southern portion of the project, sections of the existing Lakefront Trail are located at the shoreline, and therefore directly exposed to damaging wave action. All NDLSA Alternatives include shoreline protection measures, which includes filling in a portion of the lake and moving the existing shoreline eastward. This will create 90+ acres of additional green space and a strengthened shoreline, which will allow the Lakefront Trail to be located near the shoreline, but no longer directly exposed to wave action.
Increased rainfall intensity	The NDLSA drainage system is designed to accommodate the 15% increase in rainfall intensities that has occurred since the 1990's in Illinois; the drainage system will also have increased storage capacity.
Water quality	The drainage system for all Build Alternatives will be designed to capture and store the "first flush" of rainfall, which contains up to 90% of the pollutants deposited on the pavement between storms. This "first flush" of stormwater would ultimately pass through MWRD treatment plants. Overflows would receive secondary treatment prior to discharge into Lake Michigan.
Impervious Surface	All NDLSA Alternatives include slight increases in the amount of impervious surface, primarily due to shoreline protection measures, NDLSA and Lakefront Trail design changes. However, this increase is substantially offset by the amount of green space added, which is 2 to 5 times greater. In addition, as noted in the Surface Waters Study Spotlight, the proposed stormwater drainage system will be designed to accommodate any change in impervious surface.

For information regarding EJ and Equity considerations related to Climate Change, please see the Environmental Justice/Equity Study Spotlight.

If you have any comments on the information in this handout, or any other project materials, please email the project team at [info@ndlsd.org](mailto:info@ndlsd.org).