NYSDEC Solid Waste Management Facility Permit Application: DRAFT: Climate Leadership and Community Protection Act (CLCPA) Analysis

for the:

56th Street Transfer Station
540 56th Street
Niagara Falls, New York 14304
NYSDEC Permit No. T.B.D.

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1. Introduction

56th Street Transfer, LLC of Niagara Falls, New York is proposing to construct a solid waste transfer facility (56th Street Transfer Station or Facility) at 540 56th Street in the City of Niagara Falls, Niagara County, New York. As the Facility will require a Part 360 Solid Waste Management Facility (SWMF) permit from the New York State Department of Environmental Conservation (NYSDEC) and as the Facility lies within a NYSDEC-designated Disadvantaged Community Area (DAC), a Climate Leadership & Community Protection Act (CLCPA) Section 7(3) analysis has been supplied because the facility is considered likely to affect a DAC. Additionally, the CLCPA Section 7(2) analysis has been supplied to determine if permitting the facility operations would be consistent with Statewide greenhouse gas (GHG) emission limits established by the CLCPA in ECL Article 75.

Following the project's pre-application meeting in November 2023, the NYSDEC provided initial guidance on the CLCPA analysis that the following are required:

1. Maps identifying the primary local truck delivery and return routes within 1 mile of the facility. Associated calculation of the annual round-trip miles traveled per vehicle type on identified routes within the 1-mile radius.

2. Identification and quantification of on-site sources of emissions (facility vehicles and fossil fuel powered equipment).

3. Calculation of total annual Greenhouse Gas (GHG) and co-pollutant emissions associated with both offsite (trucking) and onsite (equipment) sources.

4. Evaluation of how the estimated GHG and co-pollutants may be reduced by an equal or greater amount within the DAC.

Upon review of the initial project application (January 2024), the NYSDEC provided additional guidance (via April 2024 Notice of Incomplete Application) that the CLCPA analysis should also include:

5. Presentation of all analysis results in both Potential To Emit (PTE) and Actual Conditions values.

6. Additional quantification of Upstream emissions for the fuel usage of onsite equipment using emission factors from the 2023 NYS Statewide GHG Emissions Report.

7. Projected future GHG and CO2e emissions for the years 2030 and 2050, including any proposed future emissions reduction strategies.

8. A discussion of the technical and economic feasibility of any alternatives or GHG mitigation measures to address the project's estimated increase in GHG emissions.

9. A Disproportionate Burden Report prepared in accordance with Draft DEP Policy DEP-23-1, Section V, Item 6.

2. Emissions Analysis

The following are provided as quantification of facility related GHG and co-pollutant emissions in response to CLCPA analysis requirements 1, 2, 3, 6, and 7 listed above. As further detailed below, and as required by CLCPA, all emissions are calculated on both Potential to Emit (PTE) basis, which quantifies the maximum potential scenario, as well as an Actual basis which represents actual anticipated conditions.

2.1 Off-Site Emission Sources Quantification

All project-related off-site emissions are a result of facility-related trucking of waste (inbound and outbound). The following provides quantification of the off-site trucking.

The proposed inbound and outbound trucking routes within a 1-mile radius of the Facility are indicated on **Sheet 1**. Each segment of the inbound and outbound routes is also identified on **Sheet 1** and the lengths of each segment are indicated on **Table 1**.

For the purposes of this evaluation it is assumed that 70% of inbound traffic will approach 56th from the north/Niagara Falls Boulevard (N.F.B.) and of that 70%, half will approach 56th from the east and half from the west. The remaining 30% of total inbound traffic is assumed to approach from the south/Buffalo Avenue and of that 30%, half will approach 56th from the east and half from the west. 100% of all outbound trucking will leave the facility south on 56th to Buffalo Ave, and eventually to Interstate 190. As it is assumed that any/all outbound destinations will be to the south, this route will minimize the total outbound trucking occurring within the DAC. As indicated on **Table 1**, the daily sub-total of all inbound and outbound trucking is 326.80 miles, which is broken down as 225.81 daily inbound miles and 100.99 daily outbound miles. It should be noted that this is a maximum/conservative estimate as it is assumed that the full permit limit of 950 tons per day will be transported every day. This represents the base PTE condition regarding off-site mileage and, as summarized on **Table 7**, with 306 operating days per year the total annual off-site trucking mileage within the study area is 69,098 Inbound miles and 30,902 Outbound miles.

It should also be noted that both the inbound and outbound miles calculations also consider the total distance to the proposed Facility tipping floor and not just the distance from where the proposed driveway enters 56th Street, therefore the On-Site Emissions calculations in Section 2.2 do not need to also quantify trucking and only quantify additional Facility-related equipment that will be used for Facility operations.

2.2 On-Site Emission Sources Quantification

As documented in the Facility Manual and Engineering Report, there will be four pieces of diesel-powered equipment to support daily Facility operations. An Excavator (Cat 320 or equivalent) will be used primarily for transfer of MSW and C&D from the tipping floor to outbound trailers, a wheeled loader (Cat 962 or equivalent) will be used primarily for transferring SSR from the tripping floor to outbound trailers, a Yard Goat (or equivalent) semi-tractor will be used to move loaded trailers from the recessed loading bays to the covered outdoor trailer parking area, and a Sweeper Truck will be used to clean exterior paved surfaces. As indicated on **Table 2** it is assumed that the excavator, loader, yard tractor, and sweeper will operate 75%, 25%, 15%, and 10% of the daily 10 hours of operation respectively. This equates to following annual total operating hours:

- Excavator = 2,295h
- Loader = 765h
- Yard Tractor = 459h
- Sweeper = 306h

As also indicated on **Table 2** the maximum PTE operating hours for each piece of equipment would be 3,060 hours (full 10 hours a day continuous operation over 306 days per year).

2.3 Estimated Annual Facility Emissions

Per NYSDEC-provided guidance, total Facility emissions were calculated using the following conversion factors:

- CO_2, CH_4, and N_2O emission factors were obtained from Tables 2-4 at: https://www.epa.gov/climateleadership/ghg-emission-factors-hub
- Carbon dioxide equivalents were obtained from 6 NYCRR Part 496.5
- PM 2.5 and PM 10 were calculated using the AFLEET tool located at: https://afleet.es.anl.gov/afleet/

All tables presenting calculations of GHG and Co-Pollutant emissions (**Tables 3 through 7**) are presented as both PTE and Actual values with PTE scenario being continuous (10hr per day) operation of onsite equipment and the Actual scenario reduces onsite equipment operation to actual projected usage (defined in Sect 2.2).

Tables 3 and 4 summarize the resulting calculations of each individual GHG and co-pollutant for Off-site and On-Site sources respectively. A copy of the completed AFLEET tool has also been electronically submitted with this analysis as backup for the PM 2.5 and PM 10 calculations.

Table 5 provides the additional Upstream Emissions analysis for the onsite equipment as requested by the April 2024 NOIA. The Upstream Emissions are presented as CO_2 equivalent values using the emission factors as included in the 2023 NYS Statewide GHG Emissions Report.

Table 6 provides the final conversion of individual GHGs (from Tables 3 and 4) to carbon-dioxide equivalents, using the CO_2 equivalent values contained in 6 NYCRR Part 496.5.

2.4 Qualitative Discussions

Although the final Total GHG Emissions value(s) are calculated per the above (and summarized in Section 3.1), the following qualitative discussions should be considered when evaluating the project:

Trucking Offsets

There are two currently existing solid waste management facilities within the same DAC: the Reworld incinerator facility and the Allied Waste landfill. As the proposed Facility will compete with these existing facilities, and as the Allied Waste landfill will be closing in the near future, the total trucking miles associated with the Facility will not all be "new' trucking miles within the DAC and will rather be offset by a combination of both waste diverted from the existing facilities as well as the difference in travel distance to the Facility tipping area versus the tipping areas of the existing facilities.

As previously presented to the NYSDEC in prior draft versions of this application, these offsite trucking offsets would reduce the estimated annual emissions associated with the Facility by approximately 20%.

Actual Waste Receipts

All emissions calculations (both PTE and Actual) are also based on the assumption that the Facility will process the maximum permitted amount of 950 tons of solid waste every day, all year. Actual annual

waste receipts will be significantly lower as the 950 tons per day is a value that allows for a reasonable amount of expansion over actual anticipated volumes without requiring a permit modification to increase capacity in the near future.

Taking all qualitative points into consideration it is estimated that the Facility's true addition to GHG and co-pollutant emissions within the DAC may be as low as half as that which is required by/presented in this evaluation.

3. Reduction Analysis

3.1 Initial Emissions Reduction Target

As indicated on **Table 7** (which provides a final summary of all input values, data sources, assumptions, and results) the estimated annual Facility emissions within the DAC (for the Actual scenario and not including additional Upstream emissions) are as follows:

- Total GHG Emissions = 254,476kg CO_2 equivalent
- Co-Pollutant PM 2.5 = 8.3lbs
- Co-Pollutant PM 10= 33.8lbs

It should be noted that the calculations spreadsheet is structured so that it is controlled by the variables in green text on **Table 7**. This is relevant as the following mitigation discussions will be demonstrated by variations of **Table 7** representing additional mitigation scenarios.

3.2 Emissions Mitigation Evaluation and Feasibility Analysis

The following provide for the required technical and economic feasibility analysis to achieve equal or greater reduction of the project's GHG annual emission and co-pollutant balances as summarized above.

3.2.1 Solar Capacity

Description

Table 8 presents calculations of the solar capacity that would be required to offset the balance. These calculations are based on the system design specifications, outputs, and installation costs as averaged from multiple system designs from Solar Liberty in New York State. As summarized on Table 8, a solar system with a 364.13MWh/yr output (or approximately 16,800sft) would be required to offset the full balance.

The Applicant has identified a potential location for a solar system at the former YMCA located at 1317 Portage Road in Niagara Falls. The current owner/operator of this building is converting a portion to use as a Woman's Shelter providing housing and assistance to victims of domestic abuse. The solar system could be provided by the Applicant as a direct donation to the Shelter as part of the ongoing facility conversions/upgrades. There is enough roof space on this building to accommodate a 3,250sft solar system which has an associated annual GHG reduction value of approximately 49,000kg CO2e.

Additionally, the Applicant has considered installing solar streetlights at three parks within Niagara Falls to contribute to the offset of project emissions. Based upon preliminary discussions with the City of Niagara Falls, the Applicant has also considered installation of three lights at each park. GHG reduction calculations are based off an 80Wp solar output and 2,075 average hours of sunshine per year in Niagara Falls. In total, the associated annual GHG reduction value of nine solar streetlights is estimated at 1,046 kg of CO2e.

Feasibility

Solar is a technically feasible option as it relies on existing/established technology which provides immediate and continuous tangible benefits in regards to GHG reduction by providing additional renewable energy capacity. It is also an economically feasible option as due to advancements in the technology and prevalence of it's use, solar installation costs are reasonable and are also supplemented by incentives.

It should be noted however, that the Woman's Shelter is not located within the same DAC as the 56th Street Transfer Facility. However, from a "macro" perspective the Shelter is only approximately 3.3 miles from the 56th Street Transfer Facility and is located within a separately designated DAC within the same City of Niagara Falls. Additionally, the donation of the solar system would not only provide the GHG reduction benefits stated above, but also represent permanent/ongoing money savings for an organization dedicated specifically to aiding/benefiting members of the local DAC. Also, during discussions with the City of Niagara Falls exploring different options of how 56th can implement mitigation measures, the City did not select/prefer rooftop solar as an option and rather focused on the parks improvements measures that are currently incorporated into the plan. Additionally, buildings within the host DAC with large enough rooftops to support rooftop solar systems of significant size are largely either previously-eliminated City-owned properties (schools) or owned by large private corporations (Home Depot, national hotel and restaurant chains, etc..) that do not need 56th's support in implementing community-benefiting green measures. No comments were received regarding solar within or outside of the host-DAC during the Early Engagement Public Meeting.

In regards to streetlights, only two parks are located within the project's DAC. A third park would need to be selected outside of this boundary, within the City of Niagara Falls.

Conclusion

The installation of rooftop solar and solar streetlights prove to be viable options as they are both technically and economically feasible. Additionally, a suitable location for the rooftop solar is already identified but would require additional review and comment by the NYSDEC as it is not within the host DAC, and two of three Niagara Falls parks are located within the host DAC. These options would help address the project's GHG balance but would not affect the co-pollutant balances as these options still include diesel powered on and off-site vehicles.

Selection

As summarized on **Table 14**, both options (donation of a 3,250sft solar system and installation of nine solar streetlights) are included as part of the proposed Initial Mitigation strategy. Executed Letters of Intent/Agreements with both the Niagara Gospel Mission and City of Niagara Falls are included as **Appendix A**.

3.2.2 Alternate Charging and Fueling Infrastructure

Description

Table 9 presents calculations of alternate charging and fueling infrastructure (CFI) that would be required to offset the remaining balance. GHG reduction calculations are based on EPA's AFLEET CFI Emissions Tool and CFI installation costs are estimated as potential ranges based on various publicly available reference information. Table 9 presents the number of each fuel type CFI that would be required to at least offset the remaining mitigation balance. It should be noted that the AFLEET tool presents three different reduction values for each type of CFI based on the rate of utilization (low, moderate, and high). For purposes of this evaluation the Moderate Utilization rate is that which is used for calculation purposes. As indicated on Table 9, mitigation of the balance could be achieved via the installation and use of either; 47 Level 2 Electric Vehicle charging stations, 10 DC fast charge (Level 3) Electric Vehicle charging stations, 2 Hydrogen fueling stations, 2 Compressed Natural Gas (CNG) fueling stations, or 5 Liquified Natural Gas (LNG) fueling stations.

Feasibility
Overall, the addition of CFIs within the DAC is a technically feasible option as it relies on existing/established technology which provides immediate and continuous tangible benefits in regards to GHG reduction by providing additional alternate fuel vehicle re-charging capacity.

The Hydrogen, CNG, and LNG CFIs are not economically feasible options in terms of total cost as compared to other options. The Level 2 and Level 3 electric vehicle fueling stations are more economically feasible due to lower average installation costs and available incentives reducing overall cost.

Additional technical and economic feasibility concerns associated with individual CFI types include:

- Identification (and associated procurement and permitting efforts) of charging station locations
- Potential need for new electric service lines for EVSEs (single phase for Level 2 EVSEs and three phase power for Level 3 EVSEs)
- Hydrogen, CNG, and LNG stations also require regular refueling which introduces additional and continuous long term operational and maintenance costs.

Conclusion
Providing either 47 Level 2 or 10 Level 3 charging stations are potentially feasible options. Provided that the assumption of the potential usage rate of the proposed EV charging stations is correct this option could fully address the GHG balance. Co-pollutant reduction values are harder to quantify as they would be driven by the types of vehicles that use the proposed stations.

However, additional significant efforts need to be made to identify appropriate locations within the DAC, obtain rights or permissions to the associated property, and determine actual site-specific installation efforts/costs. Additionally, as opposed to a solar system which continuously produces if it is maintained properly, these items only provide a benefit if they are used by the public and at rates similar to those that are assumed by this analysis. Lastly, although the charging stations would be located within the DAC, there is no way to quantify how much the ZEV's that use the charging stations would drive within the DAC itself, making it difficult to accurately quantify actual realized emission reductions within only the DAC as required by CLCPA.

Selection
Charging stations are not selected as part of the Initial Mitigation strategy.

3.2.3 Carbon Sequestration (Trees)

Description
There are a multitude of existing and theoretical carbon sequestration technologies. For purposes of this evaluation, carbon sequestration via planting of trees is considered. **Table 10** presents calculations of the additional tree biomass that would be required to offset the remaining balance. GHG reduction calculations are based on an online tree carbon calculator as referenced on the table. It should be noted that this evaluation assumes the planting of seedlings and then calculates the anticipated CO2e sequestration rate at a tree age of 25 years. So, values presented for this evaluation represent a +25-year condition (or at ~2050) rather than the immediate/continuous condition represented by Solar option or the immediate/per use condition represented by the CFI option. As indicated on the table, this evaluation looks at four types of trees suitable for growth in the region (Douglas Fir, Oak, Black Walnut, or Maple/Elm/Poplar) each with varying rates of carbon sequestration.

As summarized on **Table 10**, the required amount of planting area to achieve reduction of the remaining GHG balance ranges from approximately 750 to 1,200 acres.

Feasibility
From an initial technical feasibility perspective, the process of obtaining, planting and maintaining trees is a straightforward task that is easy to achieve. And the ability of trees to achieve additional carbon sequestration is well documented/established. However, the large planting areas needed to achieve mitigation makes this an infeasible alternative.

Conclusion
Planting of trees as a complete mitigation strategy is not feasible if required directly within the DAC. Additionally, this option would only address GHGs but not co-pollutants as on and off-site diesel fueled equipment would still be used. However, the planting of trees within the DAC would help to address the final balance/achieve partial mitigation.

Selection
Carbon sequestration (via tree planting) is not selected as part of the Initial Mitigation strategy.

3.2.4 Alternative Fueled Vehicles

Description
As they are the only sources of GHGs and co-pollutants associated with this project, replacing diesel-fueled trucks and equipment with alternative-fueled vehicles and equipment (electric, CNG, LNG, etc) would be the most direct and quantifiable way to achieve GHG and co-pollutant reduction goals. As all electric vehicles have zero tailpipe emissions, replacement of diesel fueled vehicles with all electric counterparts would reduce all project-related emissions (GHG and co-pollutant) within the DAC to zero.

Feasibility
From a technical feasibility perspective, replacement of vehicles with all electric counterparts is a direct and simple approach as such vehicles are commercially available as well as the related/necessary charging infrastructure. It should be noted however that the Applicant/Facility Operator will not be the fleet owner of the off-site waste trucking fleet and therefore does not have direct control over the vehicle types of the off-site/on-road trucking fleet. Additional feasibility research is required to determine associated costs and to determine ability of all-electric equipment to meet the Facility's needs.

Selection
The Applicant is committed to fully evaluating the technical and economic feasibility of the purchase and use of all-electric on-site equipment (and the associated required charging infrastructure) with the goal of obtaining such equipment by 2030.

3.2.5 Electric Lawn Equipment

Description
Table 11 was obtained from NYSERDA's 'Electric Landscaping Equipment' toolkit, and outlines the total GHG reductions made from replacing gasoline fueled lawn equipment with electric equipment. For example, in order to offset the entire balance of project's GHG emissions, a total of approximately 1,500 push mowers would need to be purchased to replace existing gasoline fueled equipment within the DAC in order to offset the project's entire GHG balance.

Feasibility
Electric lawn equipment is readily available, can be easily implemented, and is financially viable. Donations can be made to neighbors located within the project's same DAC, however the effectiveness of this option in reducing project-related emissions (both GHG and co-pollutants) is dependent on

equipment use. Additionally, the large quantity required to offset the project's emissions makes this option infeasible as a stand-alone mitigation strategy.

Selection

As summarized on **Table 14**, donation of electric lawn mowers to residents within the DAC is included as part of the proposed Initial Mitigation strategy. As indicated on Table 14, the proposed 135 electric lawn mowers would achieve an annual reduction of approximately 23,500kg of GHGs within the DAC. The lawnmowers that will be distributed will be EGO® Model Number LM2101 Power Mowers or equivalent. The manual cover page and technical specifications for this model are included as **Appendix B**. An example Notice to be distributed to residents informing them of the giveaway is included as **Appendix C**. And the plan for execution of the giveaway plan is as follows:

- All pieces of equipment will be pre-purchased by the Applicant and stored either at the Facility itself or EnSol offices (depending on timing of the giveaway vs Facility construction).
- Notifications will be sent to residents in the disadvantaged community that explains the Give-A-Way program. It will describe the reason for the program, the eligibility criteria and provide a form to complete to claim their battery powered lawn mower. Notifications will be made on a phased basis, starting with residential properties closest to the Facility and will proceed outward until all units have been given away.
- Equipment will be distributed on a first come/first served basis.
- Recipients will be required to come to the giveaway location and provide proof of residence in order to receive the equipment (driver's license with current address, utility bills, mortgage payment receipt, etc.).
- A log will be maintained of all residences (by street address) that have received giveaways to both document that all giveaways occurred within the DAC and that no one singular residence received multiple giveaways.

3.3 Emissions Mitigation Strategy Selection

Based upon the above, the final selected emissions reduction strategy for the project is a two-tiered strategy consisting of:

- Implementation of Initial Mitigation strategies consisting of:
  - Niagara Gospel rooftop solar
  - Solar streetlights at three Niagara Falls parks, and
  - Electric push mower donations to residents within the DAC
- Conversion of all on-site equipment to electric, anticipated by 2030

The projected year 1 with no mitigation strategies, year 1 including initial mitigation strategies, year 2030, and year 2050 total emissions are summarized as **Tables 7, 7a, 7b, and 7c** respectively. The results of this Emissions Mitigation Strategy are also summarized below:

Year	Scenario	GHGs (kg CO2e)	% Mitigation	PM2.5 (lbs)	% Mitigation	PM10 (lbs)	% Mitigation
1	Base Condition (no mitigation)	254,476	0	8.30	0	33.8	0
1a	Base Condition w/Initial Mitigation	180,923	28.9%	8.30	0	33.8	0
2030	+ 100% on-site equipment conversion	77,812	69.4%	3.8	54.2%	28.8	14.8%
2050*	+ 100% on-site	101,215	60.2%	3.8	54.2%	28.8	14.8%

	equipment conversion						

*assumes that electric lawn equipment purchased for initial mitigation will no longer be functional by 2050, with mitigation balances remaining from the parks improvements, community solar project, and on-site equipment conversion.

3.4 Off Site Trucking

In addition to the Initial Mitigation Strategies, it should also be noted that NYS ECL 19-0306-B requires that 100% of all medium-duty and heavy-duty vehicles offered for sale or lease in the state be zero-emissions by 2045. Although the Applicant does not have direct control over the off-site trucking fleet, the effect of this NYS law will require that facility related off-site trucking become zero emission by 2050. For the purposes of this evaluation, it is assumed that there will be 10% conversion of medium and heavy duty vehicles (off-site trucks) by 2030 and a 100% conversion by 2050.

The combined total effect of Initial Mitigation strategies plus NYS ECL 19-0306-B for years 2030 and 2050 are summarized as **Tables 7d, and 7e** respectively, and are also summarized below:

Year	Scenario	GHGs (kg CO2e)	% Total Reduction	PM2.5 (lbs)	% Total Reduction	PM10 (lbs)	% Total Reduction
2030	Initial Mitigation + 10% off-site fleet conversion	63,661	75.0%	3.42	59.3%	25.92	23.5%
2050*	Initial Mitigation + 100% off-site fleet conversion	-50,149	119.7%	0	100%	0	100%

*assumes that electric lawn equipment purchased for initial mitigation will no longer be functional by 2050, with mitigation balances remaining from the parks improvements, community solar project, and on-site equipment conversion.

Note that, due to the initial mitigation strategies, the year 2050 GHG mitigation values are greater than 100% due to elimination of both on and off-site diesel consumption in combination with the remaining community solar and parks-improvement mitigation actions.

4. Disproportionate Burden Analysis

Pursuant to DEP Policy DEP 24-1, Section V, Item 6, the applicant for an action requiring a permit that is likely to affect a DAC must prepare a disproportionate burden report as part of the application. This Disproportionate Burden Analysis (DBA) is provided to satisfy these requirements.

4.1 DBA Requirements

The following is a listing of the individual requirements of a DBA (as listed in DEP-24-1) and a summary of where in this report each requirement is discussed is provided in italics:

- An identification of GHG and co-pollutant emissions from the project affecting the disadvantaged community;
  - *Refer to Section 2 for a summary of individual GHG and co-pollutant calculations and Section 3.1 provides the final total projected emissions summary.*
- Identification of relevant baseline data on existing burdens, including the DAC Indicators used to designate the disadvantaged community that are related to air quality and air-related health effects;
  - *A description of the DAC and associated burdens are provided below as Sections 4.2 and 4.3 respectively.*
- An evaluation of how project GHG and co-pollutant emissions would impact the disadvantaged community. The evaluation should qualitatively, and to the extent possible quantitatively, explain whether the project's GHG and co-pollutant emissions could positively or negatively impact air quality and air-related health effects, or other relevant DAC indicators, resulting from an increase in GHG or co-pollutants from the proposed action;
  - *Provided as Section 4.4*
- Where an increase to the existing burden to the disadvantaged community is identified, proposed project design considerations including a description of actions to be taken to reduce or eliminate disproportionate burdens associated with GHG or co-pollutant emissions, including any proposed permit conditions;
  - *Provided as Sections 3.4 and 4.5*
- Confirmation that an enhanced public participation plan has been completed, including any proposed changes to the project resulting from community outreach and participation.
  - *An Enhanced Public Participation Plan (PPP) for the project has been prepared and submitted to the DEC for review. The PPP will be implemented upon DEC approval and if the results of the PPP process include any proposed changes to the project resulting from community outreach, then such changes shall be included in a Revised CLCPA and DBA Report.*

4.2 Disadvantaged Community Designation

Disadvantaged communities in New York State are identified through various indicators that represent the environmental burdens or climate change risks within a community, or population characteristics and health vulnerabilities that can contribute to more severe adverse effects of climate change. The location of DACs are shown on the New York State Interactive Mapper located at:

- https://climate.ny.gov/resources/disadvantaged-communities-criteria

The DAC that the proposed Facility is located in is identified as Census Tract 36063022000. Refer to **Sheet 2** for a depiction of the DAC. This DAC, with a population of 3,277, is located in the City of Niagara Falls and is characterized by the following main land uses/features:

- The western extent of the DAC (in which the Facility is located) is zoned Industrial and includes multiple existing commercial and industrial uses.
- The northern extent of the DAC is generally defined by Niagara Falls Boulevard and includes multiple existing commercial and industrial uses.
- All remaining areas within the DAC are various residential areas with associated community-use buildings (schools, churches, etc..).
- Major thoroughfares within this DAC include:
    - NYS Interstate I-190 which runs north-south approximately in the center of the DAC.
    - Niagara Falls Boulevard which generally defines the northern border of the DAC.
    - Buffalo Avenue which generally defines the southern border of the DAC.
    - The western extent/end of the LaSalle Expressway

4.3 Existing Burdens

Existing burdens in the DAC (or DAC Indicators) were identified by accessing the Disadvantaged Community Criteria site online. Per direction from NYSDEC, existing burdens were classified as those indicators with a ranking above the 50%tile. **Table 12** summarizes all burden Indicators related to air quality and air-related health effects. This table also includes evaluations of if the project is relevant or not to an associated Indicator, and if it is determined to be relevant, whether the anticipated affect on the burden is "Positive", "Negative", "Possible", or "None".

"None" indicators are unrelated to the proposed action and consist of:

- *Percent of Population with Disabilities (79%tile):* the project would not increase disability rates
- *Housing Vacancy Rate (67%tile):* the project neither removes existing housing nor involves re-zoning which would decrease potential housing area.
- *Industrial/Manufacturing/Mining Land Use (Zoning) (94%tile):* the project is permitted by existing zoning (Industrial) and does not require re-zoning.
- *Municipal Waste Combustors (75%tile):* unrelated
- *Power Generation Facilities (51%tile):* unrelated
- *Regulated Management Plan (Chemical) Sites (100%tile);* unrelated
- *Remediation Sites (96%tile):* unrelated
- *Wastewater Discharge (73%tile):* all discharge routed through City's sewer system (w/treatment)

There is one "Positive" indicator: *Percent of Population without Health Insurance (60%tile).* The project would create new jobs, which provide health insurance, within the DAC.

"Possible" indicators are those that could be affected as potential indirect results of increases of vehicle emissions from diesel fueled traffic, but which cannot be directly quantified. These include: *Asthma ED Visits (63%tile), COPD ED Visits (82%tile), Heart attack Hospitalization (100%tile), Low Birthweight (84%tile), and Premature Deaths (81%tile).*

"Negative" indicators are those which can be directly attributed to increased vehicle emissions and include: *Particulate Matter (PM2.5) (80%tile), Traffic: Diesel Trucks (81%tile), and Traffic: Number of Vehicles (81%).*

Quantification of maximum potential increase of the "Negative" Indicators are also discussed in detail below.

4.4 Evaluation of Project Impacts to the DAC

All Indicators identified as relevant to the project are related to increases in trucking traffic within the DAC. As summarized in **Table 7**, operations of the Facility will result in a total of 236 additional trips per day (160 Inbound and 76 Outbound) on the major thoroughfares within the DAC.

The proposed Facility's negative impact on these traffic related Indicators can be quantitatively estimated by comparing the Facility's 236 new trips per day to existing traffic volumes as documented by the NYSDOT. The NYSDOT's online Traffic Data Viewer application displays AADT (annual average daily traffic) data for various routes with the DAC, including all major thoroughfares that Facility related traffic will be using. As indicated on **Table 13**, which is a summary of existing AADT values within the DAC as compared to the proposed new facility-related trucking trips, the total traffic increase on major thoroughfares within the DAC is projected at 0.40%. It should be noted that this is a maximum potential increase assuming the facility is processing the maximum permitted tonnage of 950 tons per day, every day. Actual daily tonnage (and related trucking) will be lower. It should also be noted that the 0.40% increase is only the increase in total traffic as presented on Table 13 and should not be also interpreted as a direct corresponding increase in the DAC Indicator value score.

4.5 Mitigation of Project Impacts to the DAC

The proposed Mitigation Strategy, discussed in further detail in Section 3.3, consists of:

- Implementation of Initial Mitigation strategies as summarized in **Table 14**
- Conversion of all on-site equipment to electric by 2030

Additionally, as presented in Section 3.4, NYS law will require conversion the of off-site trucking fleet (by third-party fleet owner(s)) to 10% zero-emissions by 2030 and 100% by 2050.

The net effect of full implementation of this Mitigation Strategy plus the required off-site trucking fleet conversion will not only achieve a 100% mitigation of project-related co-pollutants by 2050 but will also achieve a 119.7% reduction in CO2e/yr GHGs (or a "surplus" of 50,149kg) due to the combination of no further diesel emissions and the on-going benefits of the off-site solar systems and streetlights.

Tables

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Table 1
56th Street Transfer Facility: CLCPA Analysis
Offsite Emission Sources: Trucking Miles

	a	b[1]	c[2]	d[3]	e[4]
PROPOSED 56TH TRANSFER STATION - TRUCKING MILES WITHIN 1-MILE RADIUS					
Road Segment	**Length (ft)**	**Length (mi)**	**% Total Trips Per Day**	**Total Trips Per Day**	**Total Miles Per Day**
IN NW	6066	1.15	35%	56	64.34
IN NE	4888	0.93	35%	56	51.84
IN N	1468	0.28	70%	112	31.14
IN SW	5507	1.04	15%	24	25.03
IN SE	2269	0.43	15%	24	10.31
IN S	4746	0.90	30%	48	43.15
OUT	7016	1.33	100%	76	100.99
			Total: Inbound		225.81
			Total: Outbound		100.99

Notes:
1. = a/5280
2. = assumption
3. = c*Table7_b8 (inbound) or c*Table7_b9 (outbound)
4. = b*d

Table 2
56th Street Transfer Facility: CLCPA Analysis
Onsite Emission Sources

	a[2]	b[3]	c[4]	d[5]	e[6]	f[7]
Equipment	**Daily Usage Rate**	**Average Daily Hours of Use**	**Operating Days Per Year**	**Average Operating Hours Per Year**	**Maximum (P.T.E.) Daily Hours of Use**	**Maximum (P.T.E.) Operating Hours Per Year**
Cat 320 Excavator	75%	7.5	306	2,295	10	3060
CAT 980G Wheel Loader	25%	2.5	306	765	10	3060
Yard Goat Semi-Tractor	15%	1.5	306	459	10	3060
Street Sweeper	10%	1.0	306	306	10	3060

Notes:
1. Operating days per year based on 6 days per week, and 52 weeks per year, minus 6 holidays.
2. = Table7_a21-a24
3. = c*Table7_a5
4. = Table7_a4
5. = b*c
6. = Table7_a5
7. = c*e

Table 3
56th Street Transfer Facility: CLCPA Analysis
Offsite Greenhouse Gas Emission Analysis

	a[4]		b[1]	c[5]	d[1]	e[6]	f[2]	g[7]	h[1]	i[8]	j[3]	k[3]
Truck Route and Type	**Total Annual Miles**	**Fuel Type**	**CH_4 Factor (g / mile)**	**Total Annual CH_4 (g)**	**N_2O Factor (g / mile)**	**Total Annual N_2O (g)**	**Fuel Efficiency (miles/gallon)**	**Total Annual Gallons**	**kg CO_2 per gallon**	**kg CO_2**	**PM 2.5 (lb)**	**PM 10 (lb)**
Inbound Collection Trucks (Refuse Truck)	69,098	Diesel	0.0095	656.43	0.0431	2,978.11	6.80	10,161.41	10.21	103,747.99	2.9	21.8
Outbound Transfer Trailer Trucks (Combination Long-Haul Truck)	30,902	Diesel	0.0095	293.57	0.0431	1,331.89	6.80	4,544.45	10.21	46,398.88	0.9	7.0
		Total		**950.00**		**4,309.99**		**14,705.86**		**150,146.87**	**3.80**	**28.80**

Notes:

1. CH_4 Factor, N_2O Factor are from Table 4 Mobile Combustion CH_4 and NO_2 for On Road Diesel and Alternative Fuel Vehicles, Medium and Heavy Duty Vehicles at https://www.epa.gov/climateleadership/ghg-emission-factors-hub. CO_2 per gallon factor is from Table 2 Mobile Combustion CO2, Diesel Fuel (https://www.epa.gov/climateleadership/ghg-emission-factors-hub).

2. Fuel Effiency values are from AFLEET Tool 2020 (https://afleet.es.anl.gov/afleet/) Key Vehicle Inputs, Heavy Duty Vehicle Information for Combination Long-Haul Truck, and Refuse Truck for the outbound and inbound truck types respectively.

3. PM 2.5 and PM 10 total values are from the accompanying AFLEET Tool Spreadsheet, Footprint-Onroad and Footprint Output tabs - On-Road Fleet Footprint Calculator Output - Energy Use and Emissions (https://afleet.es.anl.gov/afleet/).

4. = Table7_b10
5. = a*b
6. = a*d
7. = a/f
8. = g*h

Table 4
56th Street Transfer Facility: CLCPA Analysis
Onsite Greenhouse Gas Emission Analysis

	a[4]		b[2]	c[5]	d[1]	e[6]	f[1]	g[7]	h[1]	i[8]	j[3]	k[3]
Maximum P.T.E. Equipment Operation												
Equipment	**Operating Hours Per Year**	**Fuel Type**	**Fuel Consumption (Diesel Gallon Eqivalent/HR)**	**Annual Gallons**	**CH_4 Factor (g / gallon)**	**CH_4 (g)**	**N_2O Factor (g / gallon)**	**N_2O (g)**	**kg CO_2 per gallon**	**kg CO_2**	**PM 2.5 (lb)**	**PM 10 (lb)**
Cat 320 Excavator	3,060	Diesel	3.07	9,394	0.94	8,830.55	0.87	8,172.95	10.21	95,914.78	4.1	4.8
CAT 980G wheel loader	3,060	Diesel	2.41	7,375	0.94	6,932.12	0.87	6,415.90	10.21	75,294.67	3.2	3.2
Yard Goat Semi-Tractor	3,060	Diesel	1.63	4,988	0.94	4,688.53	0.87	4,339.39	10.21	50,925.44	2.4	2.4
Street Sweeper	3,060	Diesel	0.54	1,652	0.94	1,553.26	0.87	1,437.59	10.21	16,871.00	2.9	2.9
					Totals:	**22,004.46**		**20,365.83**		**239,005.89**	**12.6**	**13.3**
Actual Average Equipment Operation												
Equipment	**Operating Hours Per Year**	**Fuel Type**	**Fuel Consumption (Diesel Gallon Eqivalent/HR)**	**Annual Gallons**	**CH_4 Factor (g / gallon)**	**CH_4 (g)**	**N_2O Factor (g / gallon)**	**N_2O (g)**	**kg CO_2 per gallon**	**kg CO_2**	**PM 2.5 (lb)**	**PM 10 (lb)**
Cat 320 Excavator	2,295	Diesel	3.07	7,046	0.94	6,622.91	0.87	6,129.72	10.21	71,936.09	3.1	3.6
CAT 980G wheel loader	765	Diesel	2.41	1,844	0.94	1,733.03	0.87	1,603.98	10.21	18,823.67	0.8	0.8
Yard Goat Semi-Tractor	459	Diesel	1.63	748	0.94	703.28	0.87	650.91	10.21	7,638.82	0.3	0.3
Street Sweeper	306	Diesel	0.54	165	0.94	155.33	0.87	143.76	10.21	1,687.10	0.3	0.3
					Totals:	**9,214.55**		**8,528.36**		**100,085.67**	**4.5**	**5**

Notes:

1. The CO2 Factor is from Table 2 Mobile Combustion for Diesel Fuel from https://www.epa.gov/climateleadership/ghg-emission-factors-hub. The CH_4 and N_2O Factors are from Table 5 Mobile Combustion for Non Road Construction/Mining Equipment (similar to equipment proposed for the Facility) (https://www.epa.gov/climateleadership/ghg-emission-factors-hub).

2. Fuel Consumption values are from AFLEET Tool 2020, Off-Road Equipment Inputs, Large Equipment Information for Excavators, Rubber Tire Loaders, and Terminal Tractors.

3. PM 2.5 and PM 10 total values are from the accompanying AFLEET Tool Spreadsheet, Footprint-Offroad and Footprint Output tabs - Off-Road Fleet Footprint Calculator Output-Energy Use and Emissions (https://afleet.es.anl.gov/afleet/).

4. = Table2_f (PTE) or Table2_d

5. = a*b

6. = c*d

7. = c*f

8. = c*h

Table 5
56th Street Transfer Facility: CLCPA Analysis
Upstream GHG Emission Analysis

	a[3]	b[1]	c[4]	d[2]	e[5]
Maximum P.T.E. Onsite Equipment Operation					
	Facility Energy Consumption			Upstream Emission Rates	Annual Upstream Emission Totals
Emission Source	**Total Annual Gallons**	**Fuel Type**	**Fuel Energy Content[1] (mmbtu/gal)**	**Total Annual Fuel Energy Consumption (mmbtu)**	**CO_{2e} (g/mmbtu)**	**CO2(e) (kg)**
Excavator	9,394	Diesel	0.137381	1,290.58	24,214	31,250.22
Loader	7,375	Diesel	0.137381	1,013.13	24,214	24,531.93
Yard Goat Tractor	4,988	Diesel	0.137381	685.23	24,214	16,592.13
Street Sweeper	1,652	Diesel	0.137381	227.01	24,214	5,496.78
Totals	18,421	-	-	3,215.95	-	61,279

Actual Average Onsite Equipment Operation						
	Facility Energy Consumption				Upstream Emission Rates[2]	Annual Upstream Emission Totals
Emission Source	**Total Annual Gallons**	**Fuel Type**	**Fuel Energy Content[1] (mmbtu/gal)**	**Total Annual Fuel Energy Consumption (mmbtu)**	**CO_{2e} (g/mmbtu)**	**CO2(e) (kg)**
Excavator	7,046	Diesel	0.137381	967.94	24,214	23,437.66
Loader	1,844	Diesel	0.137381	253.28	24,214	6,132.98
Yard Goat Tractor	748	Diesel	0.137381	102.78	24,214	2,488.82
Street Sweeper	165	Diesel	0.137381	22.70	24,214	549.68
Totals	9,055	-	-	1,346.71	-	30,120

Notes:

1. Diesel fuel energy content as reported by the U.S. Energy Information Administration https://www.eia.gov/energyexplained/units-and-calculators/british-thermal-units.php
2. Upstream Emission Rates as established by Appendix A of the 2023 NYS Statewide GHG Emissions Report
3. = Table4_c
4. = a*b
5. = (c*d)/1000

Table 6

56th Street Transfer Facility: CLCPA Analysis

Annual Total Carbon Dioxide Equivalent GHG Emission and Social Cost Analysis

	a[4]	b[5]	c[6]	d[1]	e[7]
Maximum P.T.E. Onsite Equipment Operation and No Offsite Offset Miles					
	Onsite Sources	**Offsite Sources**	**Total**	**CO_2 Equivalent Value**	**CO_2 Equivalent (kg)**
Total Annual CH4 (g)	22,004.46	950.00	22,954.46	84	1,928.17
Total Annual NO2 (g)	20,365.83	4,309.99	24,675.82	264	6,514.42
Total Annual CO2 (kg)	239,005.89	150,146.87	389,152.76	1	389,152.76
				Onsite & Offsite Sources SubTotal (kg/CO_2e):	**397,595**
				Upstream Subtotal (kg/CO_2e)[3]:	**61,279**
				Total (kg/CO_2e):	**458,874**
				Total (metric ton):	**458.87**
				2024 Social Value Cost per Metric Ton[2]	**$132.09**
				Total Project Social Value Cost:	**$60,612.70**

Actual Average Onsite Equipment Operation and Offsite Offset Miles					
	Onsite Sources	**Offsite Sources**	**Total**	**CO_2 Equivalent Value[1]**	**CO_2 Equivalent (kg) (On & Offsite Subtotal)**
Total Annual CH4 (g)	9,214.55	950.00	10,164.55	84	853.82
Total Annual NO2 (g)	8,528.36	4,309.99	12,838.35	264	3,389.32
Total Annual CO2 (kg)	100,085.67	150,146.87	250,232.54	1	250,232.54
				Total:	**254,476**
				Upstream Subtotal (kg/CO_2e)[3]:	**30,120**
				Total (kg/CO_2e):	**284,596**
				Total (metric ton):	**284.60**
				2024 Social Value Cost per Metric Ton[2]	**$132.09**
				Total Project Social Value Cost:	**$37,592.29**

Notes:

1. Carbon dioxide equivalent values are from 6 NYCRR Section 496.5.
2. Social Value Cost per metric ton per Tables A1 through A3 of the 2023 Update, NYS Value of Carbon Guidan
3. From Table 5 Upstream GHG Emissions Analysis
4. = Table4_e, g, & i respectively
5. = Table3_c, e, & i respectively
6. = a+b
7. = (c*d)/1000 (for CH4 and NO2) or =c*d (for CO2)

Table 7
56th Street Transfer Facility: CLCPA Analysis
Summary of CLCPA Analysis

Maximum P.T.E. Onsite Equipment Operation

INPUTS			
Item	Value	Unit	Value Source
Facility Permitted Capacity	950	tons per day	permit limit
Average Inbound Load	12	tons	assumption
Average Outbound Load	25	tons	assumption
Annual operations	306	days per year	permit limit
Daily Operational Time	10	hours per day	permit limit
Equipment Operation Time: Excavator	100%	% of Daily Operational Time	assumption
Equipment Operation Time: Loader	100%	% of Daily Operational Time	assumption
Equipment Operation Time: Yard Tractor	100%	% of Daily Operational Time	assumption
Equipment Operation Time: Street Sweeper	100%	% of Daily Operational Time	assumption
Fuel Consumption Rate: Excavator	3.07	diesel gallon equivalent/Hour	CAT 320 Specs
Fuel Consumption Rate: Loader	2.41	diesel gallon equivalent/Hour	CAT 962 Specs
Fuel Consumption Rate: Yard Tractor	1.63	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Consumption Rate: Street Sweeper	0.54	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Efficiency: Inbound Collection Trucks	6.80	miles per gallon	AFLEET Tool
Fuel Efficiency: Outbound Trailers	6.80	miles per gallon	AFLEET Tool

RESULTS: ANNUAL GHG		
Item	Value	Unit
Annual GHG Emissions: TOTAL (incl. Upstream)	458,874	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	458,874	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	$60,613	$s Social Value Cost
NET BALANCE (less Upstream)	397,595	Kilograms: CO2 Equivalent
NET BALANCE (less Upstream)	$52,518	$s Social Value Cost

RESULTS: Sub/Individual		
Item	Value	Unit
Total Inbound Waste Trips	160	per day
Total Outbound Waste Trips	76	per day
Inbound Waste Trucking: Total Miles	69,098	annual miles
Outbound Waste Trucking: Total Miles	30,902	annual miles
Annual Diesel Consumption: Offsite Trucks	14,705.86	gallons
Annual Diesel Consumption: Onsite Equipment	23,409	gallons
Annual Particulate Emissions: PM2.5	16.40	pounds
Annual Particulate Emissions: PM10	42.10	pounds

ACTUAL CONDITIONS (actual onsite equipment usage)

INPUTS			
Item	Value	Unit	Value Source
Facility Permitted Capacity	950	tons per day	permit limit
Average Inbound Load	12	tons	assumption
Average Outbound Load	25	tons	assumption
Annual operations	306	days per year	permit limit
Daily Operational Time	10	hours per day	permit limit
Equipment Operation Time: Excavator	75%	% of Daily Operational Time	assumption
Equipment Operation Time: Loader	25%	% of Daily Operational Time	assumption
Equipment Operation Time: Yard Tractor	15%	% of Daily Operational Time	assumption
Equipment Operation Time: Street Sweeper	10%	% of Daily Operational Time	assumption
Fuel Consumption Rate: Excavator	3.07	diesel gallon equivalent/Hour	CAT 320 Specs
Fuel Consumption Rate: Loader	2.41	diesel gallon equivalent/Hour	CAT 962 Specs
Fuel Consumption Rate: Yard Tractor	1.63	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Consumption Rate: Yard Tractor	0.54	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Efficiency: Inbound Collection Trucks	6.80	miles per gallon	AFLEET Tool
Fuel Efficiency: Outbound Trailers	6.80	miles per gallon	AFLEET Tool

RESULTS: ANNUAL GHG		
Item	Value	Unit
Annual GHG Emissions: TOTAL (incl. Upstream)	284,596	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	284,596	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	$37,592	$s Social Value Cost
NET BALANCE (less Upstream)[1]	254,476	Kilograms: CO2 Equivalent
NET BALANCE (less Upstream)	$33,614	$s Social Value Cost

RESULTS: Sub/Individual		
Item	Value	Unit
Total Inbound Waste Trips	160	per day
Total Outbound Waste Trips	76	per day
Inbound Waste Trucking: Total Miles	69,098	annual miles
Outbound Waste Trucking: Total Miles	30,902	annual miles
Annual Diesel Consumption: Offsite Trucks	14,705.86	gallons
Annual Diesel Consumption: Onsite Equipment	9,803	gallons
Annual Particulate Emissions: PM2.5	8.30	pounds
Annual Particulate Emissions: PM10	33.80	pounds

Notes:
1) The GHG Emissions associated with the Actual Conditions not including Upstream emissions are those which are evaluated for targeted reduction

Table 7a
56th Street Transfer Facility: CLCPA Analysis
Summary of CLCPA Analysis: Initial Reduction Strategy, Year 1

Maximum P.T.E. Onsite Equipment Operation

INPUTS			
Item	Value	Unit	Value Source
Facility Permitted Capacity	950	tons per day	permit limit
Average Inbound Load	12	tons	assumption
Average Outbound Load	25	tons	assumption
Annual operations	306	days per year	permit limit
Daily Operational Time	10	hours per day	permit limit
Equipment Operation Time: Excavator	100%	% of Daily Operational Time	assumption
Equipment Operation Time: Loader	100%	% of Daily Operational Time	assumption
Equipment Operation Time: Yard Tractor	100%	% of Daily Operational Time	assumption
Equipment Operation Time: Street Sweeper	100%	% of Daily Operational Time	assumption
Fuel Consumption Rate: Excavator	3.07	diesel gallon equivalent/Hour	CAT 320 Specs
Fuel Consumption Rate: Loader	2.41	diesel gallon equivalent/Hour	CAT 962 Specs
Fuel Consumption Rate: Yard Tractor	1.63	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Consumption Rate: Street Sweeper	0.54	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Efficiency: Inbound Collection Trucks	6.80	miles per gallon	AFLEET Tool
Fuel Efficiency: Outbound Trailers	6.80	miles per gallon	AFLEET Tool

RESULTS: ANNUAL GHG		
Item	Value	Unit
Annual GHG Emissions: TOTAL (incl. Upstream)	458,874	Kilograms: CO2 Equivalent
Mitigation Provided (Table 14)	73,552	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	385,322	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	$50,897	$s Social Value Cost
NET BALANCE (less Upstream)	324,043	Kilograms: CO2 Equivalent
NET BALANCE (less Upstream)	$42,803	$s Social Value Cost

RESULTS: Sub/Individual		
Item	Value	Unit
Total Inbound Waste Trips	160	per day
Total Outbound Waste Trips	76	per day
Inbound Waste Trucking: Total Miles	69,098	annual miles
Outbound Waste Trucking: Total Miles	30,902	annual miles
Annual Diesel Consumption: Offsite Trucks	14,705.86	gallons
Annual Diesel Consumption: Onsite Equipment	23,409	gallons
Annual Particulate Emissions: PM2.5	16.40	pounds
Annual Particulate Emissions: PM10	42.10	pounds

ACTUAL CONDITIONS (actual onsite equipment usage)

INPUTS			
Item	Value	Unit	Value Source
Facility Permitted Capacity	950	tons per day	permit limit
Average Inbound Load	12	tons	assumption
Average Outbound Load	25	tons	assumption
Annual operations	306	days per year	permit limit
Daily Operational Time	10	hours per day	permit limit
Equipment Operation Time: Excavator	75%	% of Daily Operational Time	assumption
Equipment Operation Time: Loader	25%	% of Daily Operational Time	assumption
Equipment Operation Time: Yard Tractor	15%	% of Daily Operational Time	assumption
Equipment Operation Time: Street Sweeper	10%	% of Daily Operational Time	assumption
Fuel Consumption Rate: Excavator	3.07	diesel gallon equivalent/Hour	CAT 320 Specs
Fuel Consumption Rate: Loader	2.41	diesel gallon equivalent/Hour	CAT 962 Specs
Fuel Consumption Rate: Yard Tractor	1.63	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Consumption Rate: Yard Tractor	0.54	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Efficiency: Inbound Collection Trucks	6.80	miles per gallon	AFLEET Tool
Fuel Efficiency: Outbound Trailers	6.80	miles per gallon	AFLEET Tool

RESULTS: ANNUAL GHG		
Item	Value	Unit
Annual GHG Emissions: TOTAL (incl. Upstream)	284,596	Kilograms: CO2 Equivalent
Mitigation Provided (Table 14)	73,552	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	211,044	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	$27,877	$s Social Value Cost
NET BALANCE (less Upstream)[1]	180,923	Kilograms: CO2 Equivalent
NET BALANCE (less Upstream)	$23,898	$s Social Value Cost

RESULTS: Sub/Individual		
Item	Value	Unit
Total Inbound Waste Trips	160	per day
Total Outbound Waste Trips	76	per day
Inbound Waste Trucking: Total Miles	69,098	annual miles
Outbound Waste Trucking: Total Miles	30,902	annual miles
Annual Diesel Consumption: Offsite Trucks	14,705.86	gallons
Annual Diesel Consumption: Onsite Equipment	9,803	gallons
Annual Particulate Emissions: PM2.5	8.30	pounds
Annual Particulate Emissions: PM10	33.80	pounds

Notes:
1) The GHG Emissions associated with the Actual Conditions not including Upstream emissions are those which are evaluated for targeted reduction

Table 7b
56th Street Transfer Facility: CLCPA Analysis
Summary of CLCPA Analysis: Initial Reduction Strategy, Year 2030

Maximum P.T.E. Onsite Equipment Operation

INPUTS			
Item	Value	Unit	Value Source
Facility Permitted Capacity	950	tons per day	permit limit
Average Inbound Load	12	tons	assumption
Average Outbound Load	25	tons	assumption
Annual operations	306	days per year	permit limit
Daily Operational Time	10	hours per day	permit limit
Equipment Operation Time: Excavator	100%	% of Daily Operational Time	assumption
Equipment Operation Time: Loader	100%	% of Daily Operational Time	assumption
Equipment Operation Time: Yard Tractor	100%	% of Daily Operational Time	assumption
Equipment Operation Time: Street Sweeper	100%	% of Daily Operational Time	assumption
Fuel Consumption Rate: Excavator	3.07	diesel gallon equivalent/Hour	CAT 320 Specs
Fuel Consumption Rate: Loader	2.41	diesel gallon equivalent/Hour	CAT 962 Specs
Fuel Consumption Rate: Yard Tractor	1.63	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Consumption Rate: Street Sweeper	0.54	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Efficiency: Inbound Collection Trucks	6.80	miles per gallon	AFLEET Tool
Fuel Efficiency: Outbound Trailers	6.80	miles per gallon	AFLEET Tool

RESULTS: ANNUAL GHG		
Item	Value	Unit
Annual GHG Emissions: TOTAL (incl. Upstream)	458,874	Kilograms: CO2 Equivalent
Mitigation Provided (Table 14)	73,552	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	385,322	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	$50,897	$s Social Value Cost
NET BALANCE (less Upstream)	324,043	Kilograms: CO2 Equivalent
NET BALANCE (less Upstream)	$42,803	$s Social Value Cost

RESULTS: Sub/Individual		
Item	Value	Unit
Total Inbound Waste Trips	160	per day
Total Outbound Waste Trips	76	per day
Inbound Waste Trucking: Total Miles	69,098	annual miles
Outbound Waste Trucking: Total Miles	30,902	annual miles
Annual Diesel Consumption: Offsite Trucks	14,705.86	gallons
Annual Diesel Consumption: Onsite Equipment	23,409	gallons
Annual Particulate Emissions: PM2.5	16.40	pounds
Annual Particulate Emissions: PM10	42.10	pounds

ACTUAL CONDITIONS (actual onsite equipment usage)

INPUTS			
Item	Value	Unit	Value Source
Facility Permitted Capacity	950	tons per day	permit limit
Average Inbound Load	12	tons	assumption
Average Outbound Load	25	tons	assumption
Annual operations	306	days per year	permit limit
Daily Operational Time	10	hours per day	permit limit
Equipment Operation Time: Excavator	0%	% of Daily Operational Time	assumption
Equipment Operation Time: Loader	0%	% of Daily Operational Time	assumption
Equipment Operation Time: Yard Tractor	0%	% of Daily Operational Time	assumption
Equipment Operation Time: Street Sweeper	0%	% of Daily Operational Time	assumption
Fuel Consumption Rate: Excavator	3.07	diesel gallon equivalent/Hour	CAT 320 Specs
Fuel Consumption Rate: Loader	2.41	diesel gallon equivalent/Hour	CAT 962 Specs
Fuel Consumption Rate: Yard Tractor	1.63	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Consumption Rate: Yard Tractor	0.54	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Efficiency: Inbound Collection Trucks	6.80	miles per gallon	AFLEET Tool
Fuel Efficiency: Outbound Trailers	6.80	miles per gallon	AFLEET Tool

RESULTS: ANNUAL GHG		
Item	Value	Unit
Annual GHG Emissions: TOTAL (incl. Upstream)	151,365	Kilograms: CO2 Equivalent
Mitigation Provided (Table 14)	73,552	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	77,812	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	$10,278	$s Social Value Cost
NET BALANCE (less Upstream)[1]	77,812	Kilograms: CO2 Equivalent
NET BALANCE (less Upstream)	$10,278	$s Social Value Cost

RESULTS: Sub/Individual		
Item	Value	Unit
Total Inbound Waste Trips	160	per day
Total Outbound Waste Trips	76	per day
Inbound Waste Trucking: Total Miles	69,098	annual miles
Outbound Waste Trucking: Total Miles	30,902	annual miles
Annual Diesel Consumption: Offsite Trucks	14,705.86	gallons
Annual Diesel Consumption: Onsite Equipment	0	gallons
Annual Particulate Emissions: PM2.5	3.80	pounds
Annual Particulate Emissions: PM10	28.80	pounds

Notes:
1) The GHG Emissions associated with the Actual Conditions not including Upstream emissions are those which are evaluated for targeted reduction

Table 7c
56th Street Transfer Facility: CLCPA Analysis
Summary of CLCPA Analysis: Initial Reduction Strategy, Year 2050

Maximum P.T.E. Onsite Equipment Operation

INPUTS			
Item	Value	Unit	Value Source
Facility Permitted Capacity	950	tons per day	permit limit
Average Inbound Load	12	tons	assumption
Average Outbound Load	25	tons	assumption
Annual operations	306	days per year	permit limit
Daily Operational Time	10	hours per day	permit limit
Equipment Operation Time: Excavator	100%	% of Daily Operational Time	assumption
Equipment Operation Time: Loader	100%	% of Daily Operational Time	assumption
Equipment Operation Time: Yard Tractor	100%	% of Daily Operational Time	assumption
Equipment Operation Time: Street Sweeper	100%	% of Daily Operational Time	assumption
Fuel Consumption Rate: Excavator	3.07	diesel gallon equivalent/Hour	CAT 320 Specs
Fuel Consumption Rate: Loader	2.41	diesel gallon equivalent/Hour	CAT 962 Specs
Fuel Consumption Rate: Yard Tractor	1.63	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Consumption Rate: Street Sweeper	0.54	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Efficiency: Inbound Collection Trucks	6.80	miles per gallon	AFLEET Tool
Fuel Efficiency: Outbound Trailers	6.80	miles per gallon	AFLEET Tool

RESULTS: ANNUAL GHG		
Item	Value	Unit
Annual GHG Emissions: TOTAL (incl. Upstream)	458,874	Kilograms: CO2 Equivalent
Mitigation Provided (Table 14)	50,149	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	408,725	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	$53,988	$s Social Value Cost
NET BALANCE (less Upstream)	347,446	Kilograms: CO2 Equivalent
NET BALANCE (less Upstream)	$45,894	$s Social Value Cost

RESULTS: Sub/Individual		
Item	Value	Unit
Total Inbound Waste Trips	160	per day
Total Outbound Waste Trips	76	per day
Inbound Waste Trucking: Total Miles	69,098	annual miles
Outbound Waste Trucking: Total Miles	30,902	annual miles
Annual Diesel Consumption: Offsite Trucks	14,705.86	gallons
Annual Diesel Consumption: Onsite Equipment	23,409	gallons
Annual Particulate Emissions: PM2.5	16.40	pounds
Annual Particulate Emissions: PM10	42.10	pounds

ACTUAL CONDITIONS (actual onsite equipment usage)

INPUTS			
Item	Value	Unit	Value Source
Facility Permitted Capacity	950	tons per day	permit limit
Average Inbound Load	12	tons	assumption
Average Outbound Load	25	tons	assumption
Annual operations	306	days per year	permit limit
Daily Operational Time	10	hours per day	permit limit
Equipment Operation Time: Excavator	0%	% of Daily Operational Time	assumption
Equipment Operation Time: Loader	0%	% of Daily Operational Time	assumption
Equipment Operation Time: Yard Tractor	0%	% of Daily Operational Time	assumption
Equipment Operation Time: Street Sweeper	0%	% of Daily Operational Time	assumption
Fuel Consumption Rate: Excavator	3.07	diesel gallon equivalent/Hour	CAT 320 Specs
Fuel Consumption Rate: Loader	2.41	diesel gallon equivalent/Hour	CAT 962 Specs
Fuel Consumption Rate: Yard Tractor	1.63	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Consumption Rate: Yard Tractor	0.54	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Efficiency: Inbound Collection Trucks	6.80	miles per gallon	AFLEET Tool
Fuel Efficiency: Outbound Trailers	6.80	miles per gallon	AFLEET Tool

RESULTS: ANNUAL GHG		
Item	Value	Unit
Annual GHG Emissions: TOTAL (incl. Upstream)	151,365	Kilograms: CO2 Equivalent
Mitigation Provided (Table 14)	50,149	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	101,215	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	$13,370	$s Social Value Cost
NET BALANCE (less Upstream)[1]	101,215	Kilograms: CO2 Equivalent
NET BALANCE (less Upstream)	$13,370	$s Social Value Cost

RESULTS: Sub/Individual		
Item	Value	Unit
Total Inbound Waste Trips	160	per day
Total Outbound Waste Trips	76	per day
Inbound Waste Trucking: Total Miles	69,098	annual miles
Outbound Waste Trucking: Total Miles	30,902	annual miles
Annual Diesel Consumption: Offsite Trucks	14,705.86	gallons
Annual Diesel Consumption: Onsite Equipment	0	gallons
Annual Particulate Emissions: PM2.5	3.80	pounds
Annual Particulate Emissions: PM10	28.80	pounds

Notes:
1) The GHG Emissions associated with the Actual Conditions not including Upstream emissions are those which are evaluated for targeted reduction

Table 7d
56th Street Transfer Facility: CLCPA Analysis
Summary of CLCPA Analysis: Initial Reduction Strategy + Offsite Trucking Conversion, Year 2030

Maximum P.T.E. Onsite Equipment Operation

INPUTS			
Item	Value	Unit	Value Source
Facility Permitted Capacity	855	tons per day	permit limit
Average Inbound Load	12	tons	assumption
Average Outbound Load	25	tons	assumption
Annual operations	306	days per year	permit limit
Daily Operational Time	10	hours per day	permit limit
Equipment Operation Time: Excavator	100%	% of Daily Operational Time	assumption
Equipment Operation Time: Loader	100%	% of Daily Operational Time	assumption
Equipment Operation Time: Yard Tractor	100%	% of Daily Operational Time	assumption
Equipment Operation Time: Street Sweeper	100%	% of Daily Operational Time	assumption
Fuel Consumption Rate: Excavator	3.07	diesel gallon equivalent/Hour	CAT 320 Specs
Fuel Consumption Rate: Loader	2.41	diesel gallon equivalent/Hour	CAT 962 Specs
Fuel Consumption Rate: Yard Tractor	1.63	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Consumption Rate: Street Sweeper	0.54	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Efficiency: Inbound Collection Trucks	6.80	miles per gallon	AFLEET Tool
Fuel Efficiency: Outbound Trailers	6.80	miles per gallon	AFLEET Tool

RESULTS: ANNUAL GHG		
Item	Value	Unit
Annual GHG Emissions: TOTAL (incl. Upstream)	444,723	Kilograms: CO2 Equivalent
Mitigation Provided (Table 14)	73,552	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	371,170	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	$49,028	$s Social Value Cost
NET BALANCE (less Upstream)	309,891	Kilograms: CO2 Equivalent
NET BALANCE (less Upstream)	$40,934	$s Social Value Cost

RESULTS: Sub/Individual		
Item	Value	Unit
Total Inbound Waste Trips	144	per day
Total Outbound Waste Trips	70	per day
Inbound Waste Trucking: Total Miles	62,188	annual miles
Outbound Waste Trucking: Total Miles	28,463	annual miles
Annual Diesel Consumption: Offsite Trucks	13,330.95	gallons
Annual Diesel Consumption: Onsite Equipment	23,409	gallons
Annual Particulate Emissions: PM2.5	16.02	pounds
Annual Particulate Emissions: PM10	39.22	pounds

ACTUAL CONDITIONS (actual onsite equipment usage)

INPUTS			
Item	Value	Unit	Value Source
Facility Permitted Capacity	855	tons per day	permit limit
Average Inbound Load	12	tons	assumption
Average Outbound Load	25	tons	assumption
Annual operations	306	days per year	permit limit
Daily Operational Time	10	hours per day	permit limit
Equipment Operation Time: Excavator	0%	% of Daily Operational Time	assumption
Equipment Operation Time: Loader	0%	% of Daily Operational Time	assumption
Equipment Operation Time: Yard Tractor	0%	% of Daily Operational Time	assumption
Equipment Operation Time: Street Sweeper	0%	% of Daily Operational Time	assumption
Fuel Consumption Rate: Excavator	3.07	diesel gallon equivalent/Hour	CAT 320 Specs
Fuel Consumption Rate: Loader	2.41	diesel gallon equivalent/Hour	CAT 962 Specs
Fuel Consumption Rate: Yard Tractor	1.63	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Consumption Rate: Yard Tractor	0.54	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Efficiency: Inbound Collection Trucks	6.80	miles per gallon	AFLEET Tool
Fuel Efficiency: Outbound Trailers	6.80	miles per gallon	AFLEET Tool

RESULTS: ANNUAL GHG		
Item	Value	Unit
Annual GHG Emissions: TOTAL (incl. Upstream)	137,213	Kilograms: CO2 Equivalent
Mitigation Provided (Table 14)	73,552	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	63,661	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	$8,409	$s Social Value Cost
NET BALANCE (less Upstream)[1]	63,661	Kilograms: CO2 Equivalent
NET BALANCE (less Upstream)	$8,409	$s Social Value Cost

RESULTS: Sub/Individual		
Item	Value	Unit
Total Inbound Waste Trips	144	per day
Total Outbound Waste Trips	70	per day
Inbound Waste Trucking: Total Miles	62,188	annual miles
Outbound Waste Trucking: Total Miles	28,463	annual miles
Annual Diesel Consumption: Offsite Trucks	13,330.95	gallons
Annual Diesel Consumption: Onsite Equipment	0	gallons
Annual Particulate Emissions: PM2.5	3.42	pounds
Annual Particulate Emissions: PM10	25.92	pounds

Notes:
1) The GHG Emissions associated with the Actual Conditions not including Upstream emissions are those which are evaluated for targeted reduction

Table 7e
56th Street Transfer Facility: CLCPA Analysis
Summary of CLCPA Analysis: Initial Reduction Strategy + Offsite Trucking Conversion, Year 2050

Maximum P.T.E. Onsite Equipment Operation

INPUTS			
Item	Value	Unit	Value Source
Facility Permitted Capacity	0	tons per day	permit limit
Average Inbound Load	12	tons	assumption
Average Outbound Load	25	tons	assumption
Annual operations	306	days per year	permit limit
Daily Operational Time	10	hours per day	permit limit
Equipment Operation Time: Excavator	100%	% of Daily Operational Time	assumption
Equipment Operation Time: Loader	100%	% of Daily Operational Time	assumption
Equipment Operation Time: Yard Tractor	100%	% of Daily Operational Time	assumption
Equipment Operation Time: Street Sweeper	100%	% of Daily Operational Time	assumption
Fuel Consumption Rate: Excavator	3.07	diesel gallon equivalent/Hour	CAT 320 Specs
Fuel Consumption Rate: Loader	2.41	diesel gallon equivalent/Hour	CAT 962 Specs
Fuel Consumption Rate: Yard Tractor	1.63	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Consumption Rate: Street Sweeper	0.54	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Efficiency: Inbound Collection Trucks	6.80	miles per gallon	AFLEET Tool
Fuel Efficiency: Outbound Trailers	6.80	miles per gallon	AFLEET Tool

RESULTS: ANNUAL GHG		
Item	Value	Unit
Annual GHG Emissions: TOTAL (incl. Upstream)	307,510	Kilograms: CO2 Equivalent
Mitigation Provided (Table 14)	50,149	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	257,361	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	$33,995	$s Social Value Cost
NET BALANCE (less Upstream)	196,082	Kilograms: CO2 Equivalent
NET BALANCE (less Upstream)	$25,900	$s Social Value Cost

RESULTS: Sub/Individual		
Item	Value	Unit
Total Inbound Waste Trips	0	per day
Total Outbound Waste Trips	0	per day
Inbound Waste Trucking: Total Miles	0	annual miles
Outbound Waste Trucking: Total Miles	0	annual miles
Annual Diesel Consumption: Offsite Trucks	0.00	gallons
Annual Diesel Consumption: Onsite Equipment	23,409	gallons
Annual Particulate Emissions: PM2.5	12.60	pounds
Annual Particulate Emissions: PM10	13.30	pounds

ACTUAL CONDITIONS (actual onsite equipment usage)

INPUTS			
Item	Value	Unit	Value Source
Facility Permitted Capacity	0	tons per day	permit limit
Average Inbound Load	12	tons	assumption
Average Outbound Load	25	tons	assumption
Annual operations	306	days per year	permit limit
Daily Operational Time	10	hours per day	permit limit
Equipment Operation Time: Excavator	0%	% of Daily Operational Time	assumption
Equipment Operation Time: Loader	0%	% of Daily Operational Time	assumption
Equipment Operation Time: Yard Tractor	0%	% of Daily Operational Time	assumption
Equipment Operation Time: Street Sweeper	0%	% of Daily Operational Time	assumption
Fuel Consumption Rate: Excavator	3.07	diesel gallon equivalent/Hour	CAT 320 Specs
Fuel Consumption Rate: Loader	2.41	diesel gallon equivalent/Hour	CAT 962 Specs
Fuel Consumption Rate: Yard Tractor	1.63	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Consumption Rate: Yard Tractor	0.54	diesel gallon equivalent/Hour	AFLEET Tool
Fuel Efficiency: Inbound Collection Trucks	6.80	miles per gallon	AFLEET Tool
Fuel Efficiency: Outbound Trailers	6.80	miles per gallon	AFLEET Tool

RESULTS: ANNUAL GHG		
Item	Value	Unit
Annual GHG Emissions: TOTAL (incl. Upstream)	0	Kilograms: CO2 Equivalent
Mitigation Provided (Table 14)	50,149	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	-50,149	Kilograms: CO2 Equivalent
NET BALANCE (incl. Upstream)	-$6,624	$s Social Value Cost
NET BALANCE (less Upstream)[1]	-50,149	Kilograms: CO2 Equivalent
NET BALANCE (less Upstream)	-$6,624	$s Social Value Cost

RESULTS: Sub/Individual		
Item	Value	Unit
Total Inbound Waste Trips	0	per day
Total Outbound Waste Trips	0	per day
Inbound Waste Trucking: Total Miles	0	annual miles
Outbound Waste Trucking: Total Miles	0	annual miles
Annual Diesel Consumption: Offsite Trucks	0.00	gallons
Annual Diesel Consumption: Onsite Equipment	0	gallons
Annual Particulate Emissions: PM2.5	0.00	pounds
Annual Particulate Emissions: PM10	0.00	pounds

Notes:
1) The GHG Emissions associated with the Actual Conditions not including Upstream emissions are those which are evaluated for targeted reduction

Table 8
56th Street Transfer Facility: CLCPA Analysis
Emissions Mitigation Analysis: Solar

Item	Unit	Total
Reduction Goal [1]	kg/CO2e/yr	254,475.68
Per unit saving [2]	kg CO2e/MWh	700.0
Solar Output [2]	MWh/yr/sft	0.0216
New Solar Capacity needed to offset reduction goal	MWh/yr	363.54
New Solar Capacity needed to offset reduction goal[3]	sft	16813.37
New Solar Capacity needed to offset reduction goal [3]	modules	571
Actual Solar Output	MWh/yr	364.13
Final GHG Reduction	kg/CO2e/yr	254,891.66
Surplus GHG Reduction	kg/CO2e/yr	415.97
Est. Gross Cost to provide required additional solar capacity[3][4]	cost	$746,628.75
Est. Net Cost to provide required additional solar capacity[3][4][5]	cost	$226,776.60

1) Reduction goal per the Table 7 Actual Conditions emissions estimate
2) As provided by SolarLiberty as average of multiple solar system designs in NYS
3) Individual solar panel module size of 29.49sft
4) Est. costs are rounded up to the nearest full module + a 10% contingency
5) Net costs include incetive deductions as an average of multiple solar system designs in NYS

Table 9
56th Street Transfer Facility: CLCPA Analysis
Emissions Mitigation Analysis: Alternate Charging and Fueling Infrastructure

Reduction Goal [1]	**254,475.68**	**kg/CO2e/yr**

	Item					
Charging and Fueling Infrastructure (CFI)	**Reduction Per Unit (kg GHG/CFI)[2][3]**	**Quantity of CFIs needed to offset reduction goal**	**Total Reduction (kg GHG)**	**Reduction Delta (kg GHG)**	**Cost range to provide required CFI quantity**	
					Lower Limit	**Upper Limit**
Level 2 EVSE	5,508	47	258,894	4,418	$47,000	$902,400
DCFC EVSE	25,706	10	257,058	2,582	$140,000	$910,000
Hydrogen	236,861	2	473,722	219,247	$2,800,000	$8,400,000
CNG	183,790	2	367,580	113,105	$20,000	$3,600,000
LNG	51,443	5	257,215	2,740	$5,000,000	+

1) Reduction goal per Table 7 Actual Conditions emissions estimate
2) AFLEET Charging and Fueling Infrastructure (CFI) Emissions Tool used to obtain values
3) Values are for moderately used CFIs - See table in step 2a of AFLEET CFI Emissions Tool

Table 10

56th Street Transfer Facility: CLCPA Analysis

Emissions Mitigation Analysis: Carbon Sequestration via Trees

Item	Unit	Total
Reduction Goal [(2)]	kg/CO2e/yr	254,475.68
Per Unit Saving in 2050	kg/CO2e/tree	2.5
Douglas Fir		
Recommended no. of trees per acre	trees/acre	136
CO2e sequestered per acre	kg/CO2e/acre	339.91
No. of acres required to offset reduction goal by 2050	acres	748.65
Oak Tree		
Recommended no. of trees per acre	trees/acre	95
CO2e sequestered per acre	kg/CO2e/acre	236.46
No. of acres required to offset reduction goal by 2050	acres	1,076.18
Black Walnut		
Recommended no. of trees per acre	trees/acre	87
CO2e sequestered per acre	kg/CO2e/acre	217.54
No. of acres required to offset reduction goal by 2050	acres	1,169.76
Maple/Elm/Poplar Tree		
Recommended no. of trees per acre	trees/acre	109
CO2e sequestered per acre	kg/CO2e/acre	271.93
No. of acres required to offset reduction goal by 2050	acres	935.81

1) Sequestration calculations per Tree Plantation, 2023 website, url: https://treeplantation.com/tree-carbon-calculator.html
2) Reduction goal per Table 7 Actual Conditions emissions estimate
3) Value reflects sequestration of a 25 year old tree for species analysed
Assumes no trees die or get cut down.

Table 11
56th Street Transfer Facility: CLCPA Analysis
Electric Landscaping Equipment

Gasoline Equipment Replacements (If needed, add new item descriptions in the gray cells below)	Total Pieces of Equipment Purchased	Purchase Date (Must be purchased on or after 12/13/2023)	Voltage of New Equipment[1]	Battery Capacity of New Equipment (Amp-hr)[1]	New Equipment kW Capacity	Gallons Fuel Equivalent per hour[2,3]	Total kW	Annual hours of operation[4]	New Energy use, kWh/yr	kWh/ Gallon Equivalent	Annual Fuel Savings (gallons)	Greenhouse Gas Emissions (mtCO2e)
Leaf Blowers/Vacuums (2-Cycle)			*36*	*12*	0.43	*0.24*	0.0	*10*	-	-	-	0
Leaf Blowers/Vacuums (4-Cycle)			*36*	*12*	0.43	*0.40*	0.0	*10*	-	-	-	0
Trimmers/Edgers/Cutters (2-Cycle)			*36*	*26.8*	0.96	*0.22*	0.0	*9*	-	-	-	0
Trimmers/Edgers/Cutters (4-Cycle)			*36*	*26.8*	0.96	*0.27*	0.0	*9*	-	-	-	0
Riding Mowers (4 Stroke)			*48*	*75*	3.60	*1.82*	0.0	*25*	-	-	-	0
Push Mower	1468		*40*	*5*	0.20	*0.78*	293.6	*25*	7,340	376.41	28,626	254.48514
Pressure Washers			*36*	*14.8*	0.53	*0.78*	0.0	*10*	-	-	-	0
Chainsaw			*36*	*7*	0.25	*0.25*	0.0	*13*	-	-	-	0
Pole Saws			*36*	*4.2*	0.15	*0.12*	0.0	*13*	-	-	-	0
					0.00		0.0					
					0.00		0.0					
					0.00		0.0					
Total	1468						293.6		7,340		28,626	254.48514

PROJECT TOTAL LAWN EQUIP MITIGATION	254.49	(mTCO2e)
TARGET GHG GOAL	254.48	(mTCO2e)

Reference Sources:

[1] *Default values provided. Submit manufacturer data if available in product specifications*

[2] *National Emissions from Lawn and Garden Equipment J Banks, R. McConnell https://www.epa.gov/sites/production/files/2015-09/documents/banks.pdf*

[3] *Exhaust Emission Factors for Nonroad Engine Modeling: Spark-Ignition, US Environmental Protection Agency, July 2010, EPA-420-R-10-019, NR-010-f. https://nepis.epa.gov/Exe/ZyPDF.cgi/P10081YF.PDF?Dockey=P10081YF.PDF*

[4] *Default values from National Emissions from Lawn and Garden Equipment J Banks, R. McConnell https://www.epa.gov/sites/production/files/2015-09/documents/banks.pdf*

Table obtained from NYSERDA 'Electric Landscaping Equipment' toolkit.

Table 12
56th Street Transfer Facility: CLCPA Analysis
CLCPA Disproportionate Burden Analysis: Summary

Population Characteristics & Vulnerability				
Health Impacts & Burdens				
DAC Indicator	**%tile**	**Relevant?[4]**	**Impact?**	**Discussion[3]**
Asthma ED Visits	63%	Y	Possible	Only as related to traffic - see below
COPD ED Visits	82%	Y	Possible	Only as related to traffic - see below
Heart attack (MI) Hospitalization	100%	Y	Possible	Only as related to traffic - see below
Low Birthweight	84%	Y	Possible	
Pct Adults Age 65+	45%	N	N/A	
Pct w/ Disabilities	79%	Y	None	Unrelated to proposed action
Pct w/o Health Insurance	60%	Y	Positive	Proposed action would create additional jobs with health insurance
Premature Deaths	81%	Y	Possible	Only as related to traffic - see below
Environmental Burden & Climate Change Risk				
Land Use & Historic Discrimination				
DAC Indicator	**%tile**	**Relevant?[4]**	**Impact?**	**Discussion[3]**
Active Landfills	0%	N	N/A	
Housing Vacancy Rate	67%	Y	None	Unrelated to proposed action
Industrial/Manufacturing/Mining Land Use (Zoning)	94%	Y	None	No re-zoning is required, Facility is permitted per zoning requirements.
Major Oil Storage Facilities	0%	N	N/A	
Municipal Waste Combustors	75%	Y	None	Unrelated to proposed action
Power Generation Facilities	51%	Y	None	Unrelated to proposed action
Regulated Management Plan (Chemical) sites	100%	Y	None	Unrelated to proposed action
Remediation Sites	96%	Y	None	Unrelated to proposed action
Scrap Metal Processing	0%	N	N/A	
Potential Pollution Exposure				
Benzene Concentration (Modeled)	50%	N	N/A	
Particulate Matter (PM2.5)	80%	Y	Negative	The Facility will add additional traffic within the DAC. See Section 4.4 of the Disproportionate Burden Analysis report for a complete discussion/evaluation.
Traffic: Diesel Trucks	81%	Y	Negative	
Traffic: Number of Vehicles	81%	Y	Negative	
Wastewater Discharge	73%	Y	None	No direct disharge to surface waters - all discharge routed through City's sewer system (w/treatment)

1) First four columns as displayed in CLCPA Section 7(3) Disproportionate Burden Analysis Worksheet
2) All data is obtained from <https://climate.ny.gov/Resources/Disadvantaged-Communities-Criteria>, accessed 5/29/24
3) Column added beyond worksheet template for purposes of DBA discussion
4) Relevancy was determined as a two-step process. 1) Per DEC direction provided during a 9/17/24 meeting, the first step assumes all Indicator rankings below 50% are not relevant. 2) Of the remaining >50%tile Indicators, is there potential for project-related impacts to affect the Indicator?

Table 13

56th Street Transfer Facility: CLCPA Analysis

CLCPA Disproportionate Burden Analysis: Traffic Increase Impact Evaluation

Road Segment	Description	AADT (total)[1]
Niagara Falls Boulevard (NFB) (total)	Initial AADT Total	23,320
NFB Onramp to 190S	Eval deduct/double w/190 AADT[2]	7,658
NFB Onramp to 190N	Eval deduct/double w/190 AADT[2]	2,678
NFB Subtotal	Less deducts	12,984
Buffalo Ave (total)	Initial AADT Total	8,267
Buffalo Ave Onramp to 190S	Eval deduct/double w/190 AADT[2]	4,968
Buffalo Ave Onramp to 190N	Eval deduct/double w/190 AADT[2]	2,362
Buffalo Ave Subtotal	Less deducts	937
Route 190 (total North and Southbound)	Initial AADT Total	44,758
TOTALS	**Total Existing Traffic**	58,679
	Proposed New Trips	236
	Proposed New AADT	58,915
	Percent Increase	0.40%

1) AADT values are 2022 data as displayed by the NYSDOT Traffic Data Viewer
2) Onramp AADT values are subtracted from NFB or Buffalo Ave. AADT values prior to adding to 190 AADT values, in order to calculate a corrected total AADT value for these 3 main thouroughfares combined.

Table 14
56th Street Transfer Facility: CLCPA Analysis
Initial Mitigation

Mitigation Summary	
Total kg CO2e mitiaged a year	73,552
Mitigation sub-total cost	$144,200
Mitigation administration cost	$50,000
Total mitigation cost	$194,200

NF Parks Solar and Tree Planting					
	Unit Cost	No. of Units (3 ea. at 3 parks)	GHG Reduction per Unit (kg/CO2e/yr)[1][4]	Total GHG Reduction (kg/CO2e/yr)	Total Cost
Solar Lights	$4,800	9	116	1,046	$43,200.00

Niagara Gospel Rescue Mission Solar						
	Module Net Cost[3]	Roof Size (sft)	No. of Module[2]	GHG Reduction per Module (kg/CO2e/yr)[4]	Total GHG Reduction (kg/CO2e/yr)	Total Net Cost
Rooftop Solar	$500.00	3,250	110	446	49,103	$60,500

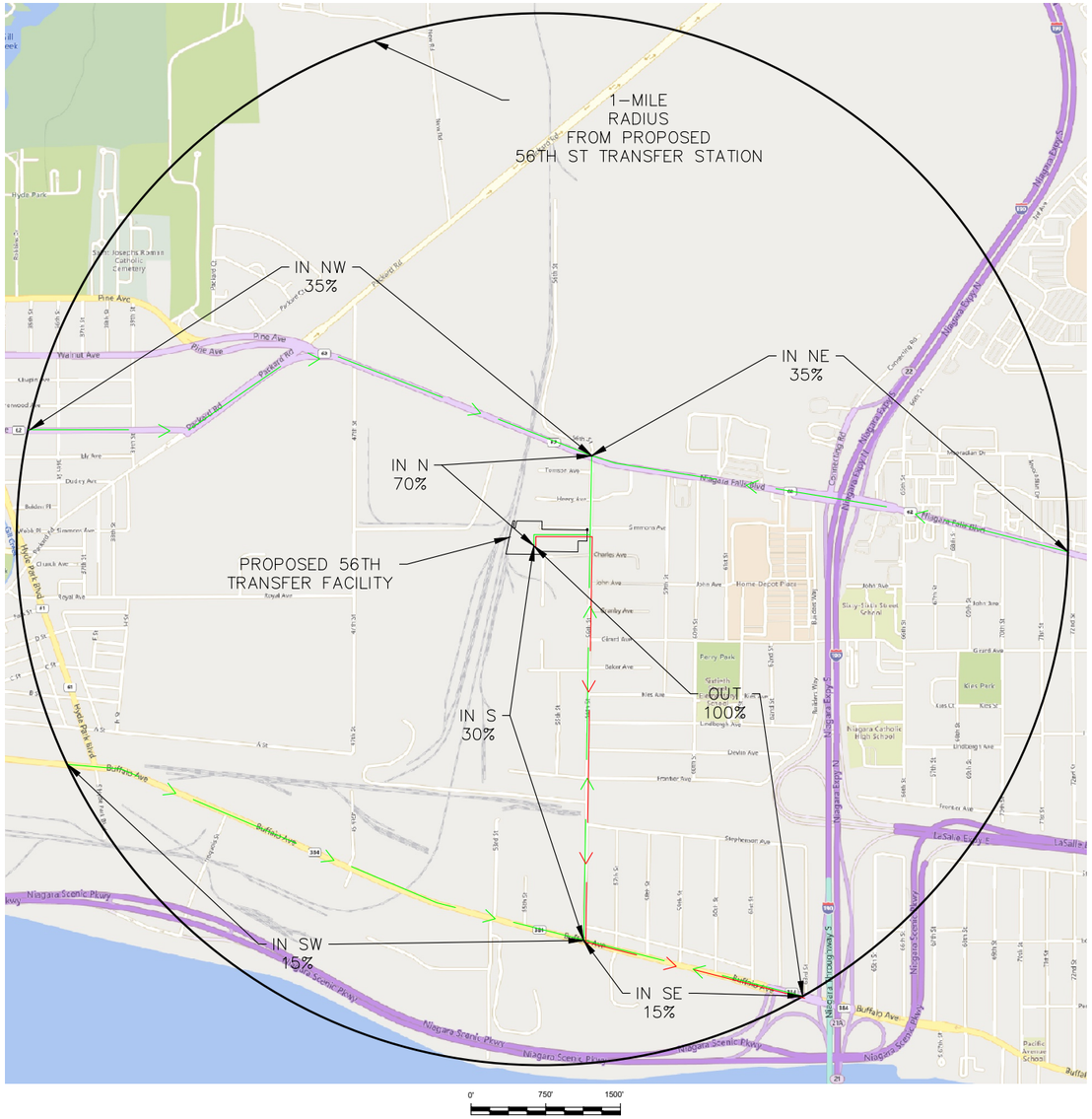
Lawn Mowers for Neighbors					
	Unit Cost	No. of Units	GHG Reduction per Unit (kg/CO2e/yr)[5]	Total GHG Reduction (kg/CO2e/yr)	Total Cost
Electric Push Mowers	$300	135	173	23,403	$40,500

1) Solar lights unit reduction value based off an 80Wp solar output, avg. annual hours of sunlight in Niagara Falls (per published average climate data). Tree unit reduction value based off of a 25 year old tree for species analysed, per Tree Plantation, 2023 website, url: https://treeplantation.com/tree-carbon-calculator.html
2) Individual solar panel module size of 29.49sft.
3) Net cost includes incetive deductions as an average of multiple solar system designs in NYS. Value rounded up to the nearest full module + a 10% contingency.
4) Per unit saving as provided by SolarLiberty as average of multiple solar system designs in NYS.
5) Obtained from NYSERDA 'Electric Landscaping Equipment' toolkit.

Drawings

EnSol, Inc.

ENGINEERING + ENVIRONMENTAL



PROPOSED 56TH TRANSFER STATION INBOUND & OUTBOUND TRUCKING ROUTES
(950tpd)

1. PERCENTAGES DISPLAYED ARE THE PERCENTAGE OF THE TOTAL 950 TONS PER DAY MAXIMUM CAPACITY
2. REFER TO THE CLCPA ANALYSIS AND ATTACHED TABLES FOR DETAILS REGARDING THE CALCULATIONS OF TOTAL ANNUAL TRUCKING MILES AND RELATED GREENHOUSE GAS EMISSIONS.

LEGEND:

< PROPOSED INBOUND TRUCKING

> PROPOSED OUTBOUND TRUCKING

N

NO.	REVISION	BY	DATE

EnSol
661 Main St.
Niagara Falls, NY 14301
716.285.3920

CLIENT:
56th STREET TRANSFER, LLC

SITE:
540 56th STREET
CITY OF NIAGARA FALLS
COUNTY OF NIAGARA
STATE OF NEW YORK

PROJECT:
56th TRANSFER STATION

TITLE:
CLCPA TRUCKING ANALYSIS: FACIILTY

ISSUE: REVIEW

DES:	DRN:	CHK:
JMS	JMS	JMS

PROJECT NO:	DATE:
169-A0001	MAY 2024

GRAPHIC SCALE: AS INDICATED

FILE: CLCPA Traffic Routes.dwg

REV NO:	SHEET NO:
0	1

NOTES:

1. DISADVANTAGED COMMUNITY (DAC) BOUNDARY LINES AS APPROXIMATED FROM THE DEC INFO LOCATOR GIS SERVICES.
2. PROPERTY LINES AS SURVEYED BY APEX CONSULTING.
3. ZONING DISTRICT BOUNDARY LINE AS APPROXIMATED FROM "SCHEDULE 8: OFFICIAL ZONING MAP" (VER 20.03.25) OF THE CITY OF NIAGARA FALLS ZONING ORDINANCE.

LEGEND:

- DAC BOUNDARY
- PROPERTY BOUNDARY
- ZONING DISTRICT BOUNDARY

NO.	REVISION	BY	DATE

EnSol
661 Main St.
Niagara Falls, NY 14301
716.285.3920

CLIENT:
56th STREET TRANSFER, LLC

SITE:
540 56th STREET

CITY OF NIAGARA FALLS
COUNTY OF NIAGARA
STATE OF NEW YORK

PROJECT:
56th TRANSFER STATION

TITLE:
DAC MAP

ISSUE:
REVIEW

DES:	DRN:	CHK:
JMS	JAK	JMS

PROJECT NO:	DATE:
169-A0001	MAY 2024

GRAPHIC SCALE:
0' 700' 1400'

FILE:
DAC MAP.dwg

REV NO:	SHEET NO:
0	2

Z:\56th Street Transfer LLC\169-A0001 56th St Transfer_Drawings\ACAD\NYSDEC App. Dwgs\DAC MAP.dwg, 10/23/2024 2:22:36 PM

Appendix A

EnSol, Inc.

ENGINEERING + ENVIRONMENTAL

Letters of Intent/Agreements

EnSol, Inc.
3000 Alt. Blvd.,
Grand Island, NY 14072
716.285.3920

ENGINEERING +
ENVIRONMENTAL

ensolinc.com

Transmitted Via e-mail

May 14, 2025

Mr. Tom McLaughlin, Campaign Officer
Niagara Gospel Rescue Mission, Inc.
1317 Portage Road
Niagara Falls, NY 14301

Re: Letter of Intent for the Installation of a Rooftop Solar System

Dear Mr. McLaughlin,

I am writing to express my intent to collaborate with Niagara Gospel Rescue Mission, Inc. (NGRM) on an impactful initiative that supports both environmental sustainability and social responsibility within our community. My company, 56th Street Transfer, LLC (56th St Transfer), proposes to install a 3,250sft rooftop solar system on NGRM's building located in Niagara Falls, NY. This installation will provide renewable energy to support the building's operations, including its newly designated purpose as a Women's Shelter offering housing and assistance to victims of domestic abuse. This project will be at no cost to the NGRM.

We believe that this project aligns with our shared commitment to sustainable development and community well-being. The installation will lower utility costs and support long-term operational sustainability, enabling more resources to be directed toward essential services for vulnerable members of our community.

In consideration of this initiative, we intend to prepare a formal agreement over the next 60 days, which will detail the scope of work, timelines, and responsibilities. It is understood that NGRM agrees to work collaboratively with 56th St Transfer throughout this process to ensure timely approvals and support for the project. The commencement of this initiative will be contingent upon the approval of the necessary permits from the New York State Department of Environmental Conservation (DEC).

We look forward to discussing this proposal further and solidifying a partnership that promotes clean energy, supports vulnerable populations, and strengthens the Niagara Falls community. Please feel free to contact me at 716-570-1295 to arrange a meeting at your convenience.

We look forward to discussing this proposal further and solidifying a partnership that promotes clean energy, supports vulnerable populations, and strengthens the Niagara Falls community. Please feel free to contact me at 716-570-1295 to arrange a meeting at your convenience.

Thank you for considering this initiative. We are excited about the potential to work together for the benefit of our community.

Sincerely,

John B Battaglia PE
Digitally signed by John B Battaglia PE
Date: 2025.05.15 12:31:32 -04'00'

John Battaglia, P.E.
Principal Engineer
EnSol Inc.

Acknowledgment and Acceptance:
By signing below, Niagara Gospel Rescue Mission, Inc. acknowledges and accepts the intent outlined in this letter and agrees to collaborate with 56th Street Transfer, LLC in the development and execution of the project.

Tom McLaughlin
Campaign Officer
May 14, 2025

City of Niagara Falls, New York

Robert M. Restaino
Mayor

June 5, 2025

John B. Battaglia, P.E.
56th Street Transfer, LLC
3000 Alt. Blvd.
Grand Island, NY 14072

Dear Mr. Battaglia,

The City of Niagara Falls is supportive of your proposed initiative to enhance our public green spaces and advancing our shared commitment to sustainability. The 56th Street Transfer, LLC (56th Street Transfer) proposal includes:

> Installation of solar-powered streetlights and ornamental plant trees in three local parks: Perry Park, Kies Court Park, and Stephenson Park. Each park would receive three solar streetlights and three ornamental trees, contributing to improved safety, energy efficiency, and the overall aesthetic appeal of these valued community spaces.

The proposed improvements are in accordance with New York's Climate Leadership and Community Protection Act (CLCPA) and part of the permitting process for 56th Street Transfer's application to the New York State Department of Environmental Conservation (NYSDEC) to construct and operate a solid waste transfer station. It is understood that these improvements will be provided at no cost to the City of Niagara Falls.

We believe this initiative strongly aligns with the City's environmental goals and community development objectives. The solar lighting will increase visibility and safety during evening hours, while the addition of trees, selected by the City , will enhance the natural environment and encourage greater community engagement and recreational use.

To move this project forward, we agree to allow 56th Street Transfer to perform this work after providing the City with a scope of work, project timelines, and the responsibilities of all parties involved. The City of Niagara Falls is willing to work in good faith with 56th Street Transfer to facilitate timely approvals and necessary support. The project commencement will be contingent upon the issuance of all required permits from the NYSDEC.

Beyond this agreement, the City understands that 56th Street Transfer also proposes to contribute additional resources to private entities within the City to meet project requirements under CLCPA. These include supporting the Niagara Gospel Rescue Mission's Women's Shelter through the installation of a rooftop

City Hall 745 Main Street, P.O. Box 69 Niagara Falls, NY 14302-0069
email: robert.restaino@niagarafallsny.gov · Telephone: 716-286-4310 · Fax: 716-286-4349

solar system and other energy-efficient building upgrades as well as distributing electric lawn mowers to households located within the project's Disadvantaged Community area. The City is fully supportive of these initiatives as part of our broader commitment to community enrichment.

We welcome the opportunity to discuss this proposal further as needed and to formalize a partnership that promotes environmental stewardship and community well-being. Please feel free to contact our office to schedule a meeting at your convenience.

Very truly yours,

Robert M. Restaino
Mayor

Acknowledgment and Acceptance:
By signing below, 56th Street Transfer acknowledges and accepts the agreement above and agrees to the development and execution of the project.

John Bataglia, P.E
Principal Engineer
EnSol Inc.

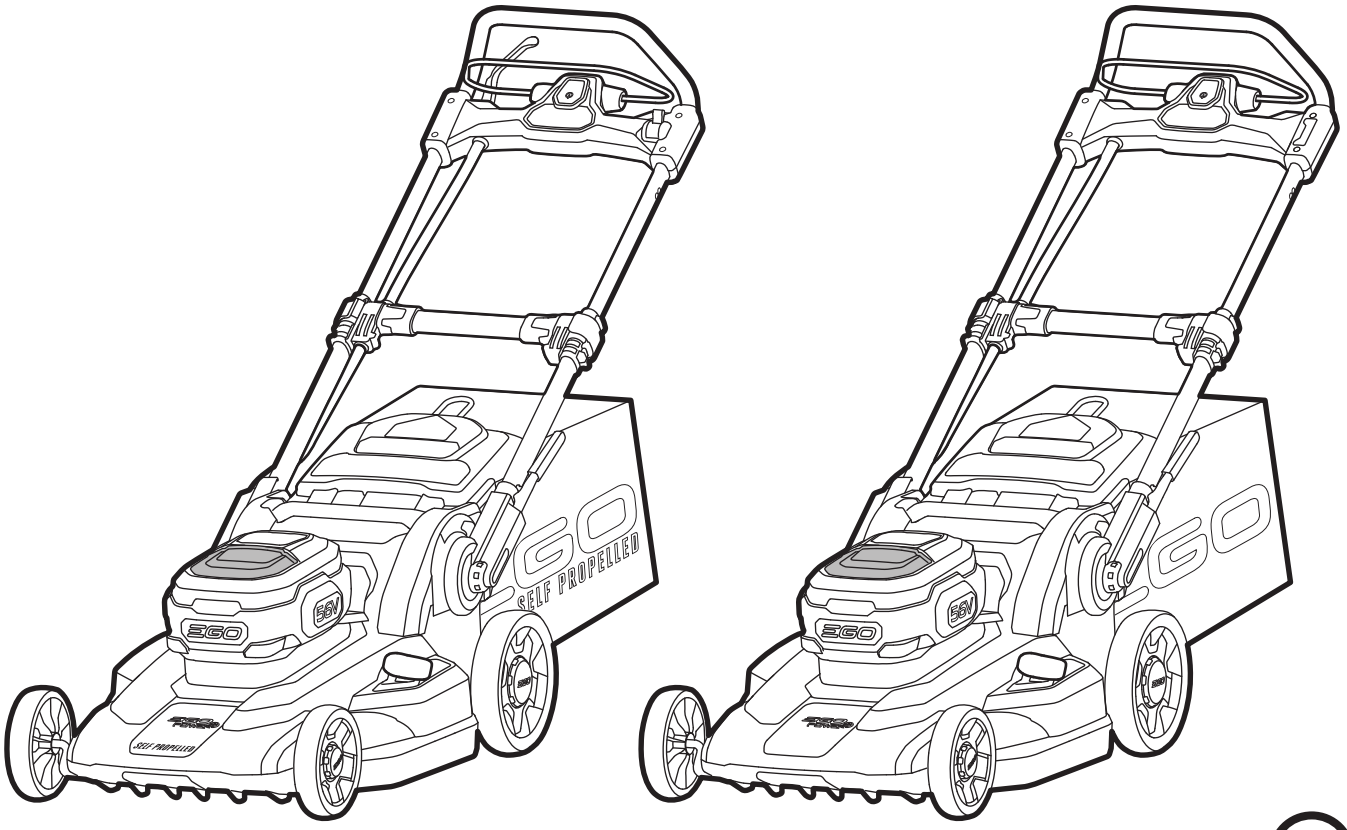
Appendix B

EnSol, Inc.

ENGINEERING + ENVIRONMENTAL

Electric Lawnmower Specifications

POWER+ MOWER



c UL us
LISTED

OPERATOR'S MANUAL

56-VOLT LITHIUM-ION CORDLESS MOWER

MODEL NUMBER LM2100SP/LM2100

Français p. 41

Español p. 81

⚠ WARNING: To reduce the risk of injury, the user must read and understand the Operator's Manual before using this product. Save these instructions for future reference.

DETAILS

The EGO 21" Power + Mower is the first lithium-ion mower to exceed the power of gas! Receive all the torque of gas without the noise, fuss and fumes. The EGO 56V Lithium-Ion Mower delivers long-lasting power, rapid charging and durability in all weather conditions. Equipped with a large 21" deck, a run time of up to 45 minutes (with 5.0Ah battery), to cut your entire lawn. Compatible with all EGO POWER+ ARC Lithium™ batteries (available separately) to deliver Power Beyond Belief™.

TECH SPECS

- Up to 45 minutes of run time on single charge with the recommended 56V 5.0 Ah ARC Lithium™ battery
- 6-position cutting height adjustments: 1.5"- 4"
- 3-in-1 function: mulching, bagging, side discharge
- Quick and easy push-button start
- 21" deck
- Bright LED headlights
- 1-handed height adjustment
- Weather resistant construction
- Folds for compact storage
- Easy-access 2-bushel grass collection bag
- Approximately 50-minute charge time when used with the recommended 5.0Ah ARC Lithium™ battery and Power+ Rapid Charger
- Compatible with all EGO 56V ARC Lithium™ batteries
- 5-year limited warranty

View The Manual View The Parts List

Appendix C

EnSol, Inc.

ENGINEERING + ENVIRONMENTAL

Electric Lawnmower Giveaway Plan & Notice

Electric Lawnmower Giveaway

Hello Neighbor!
You have been selected to receive a **free** electric lawnmower! Why? The 56th Street Transfer Station, to be located at 540 56th Street, requires a permit from the New York State Department of Environmental Conservation in order to operate. As part of New York's Climate Leadership and Community Protection Act (CLCPA), such permit is partially contingent upon making efforts to reduce greenhouse gas and co-pollutant emissions within the community.

One of the ways that 56th Transfer is achieving this is by providing residents within our community with free electric lawnmowers. By using electric (rather than gasoline powered) lawnmowers, this giveaway program will reduce gasoline consumption within the neighborhood by over 2,600 gallons each year. Resulting in an over 23ton reduction in annual emissions of carbon dioxide and carbon dioxide equivalents (greenhouse gases).

All you have to do to help us to help you make our community a greener place to live is:

- Contact us by email at 56thStTS@ensolinc.com to reserve your place in the giveaway program. Or return the below form to EnSol Inc., 3000 Alt. Blvd., Grand Island, NY 14072
- In your response, you must provide proof of residence at the street address associated with the giveaway (driver's license with current address, utility bill, mortgage statement, etc..).
- Giveaways are limited to one lawnmower per street address (residential property only).
- You will be provided with further information about pickup of your brand new electric lawnmower once you have reserved your spot and have provided proof of residence.
- The giveaway will be on a first come/first served basis until supplies run out.
- If you qualify, you will be receiving an EGO® Model Number LM2101 Power Mower, or equivalent.

Additional Information:

- If you'd like to learn more about our project in general, please visit the document repository at: https://56thStTS.ensolinc.com
- Also, be on the lookout for new solar lighting and trees at Perry Park, Kies Court Park, and Stephenson Park. We are also donating these items to the City of Niagara Falls.

Electric Lawnmower Giveaway Reservation Form

*Include a copy of one proof-of-residence item and fill out form completely. Once eligibility has been confirmed you will be contacted for details of final pickup/delivery

Name:_____ email:_____

Address:_____ Phone:_____